

MANUFACTURERS' RECORD

A WEEKLY REVIEW OF THE IRON, STEEL, METAL & HARDWARE TRADES.

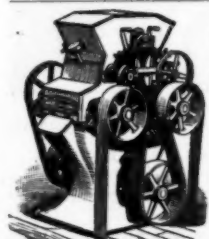
AND A MANUFACTURING AND TEXTILE PAPER, DEVOTED TO THE UPBUILDING OF SOUTHERN MANUFACTURES AND THE DEVELOPMENT OF THE MATERIAL RESOURCES OF THE SOUTH.

VOL. 8. No. 7. {
WEEKLY. }

BALTIMORE, SEPTEMBER 26, 1885.

{ \$3.00 PER ANNUM.
SINGLE COPIES, 10 CENTS. }

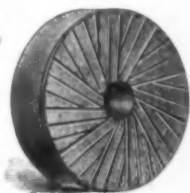
—MANUFACTURERS OF— **JAS. SMITH & CO.** —DEALERS IN—
CARD CLOTHING Works, 413 to 421 Race St., Cor. of Crown. **Manufacturers' & Mill Supplies**
Of Every Description. **COTTON and WOOLEN MACHINERY.** Office & Store, 137 Market St., Philadelphia. Of Every Description.



NORDYKE & MARMON CO., INDIANAPOLIS, IND.
Flour Mill Machinery.

We make Rolls or Portable Mills for making New Process Corn Meal.
Complete outfits on any system Rolls or Stones for Wheat Grinding.

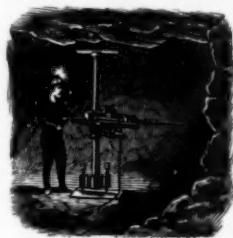
Send for Circular of our \$500 Flour Mill Outfit.



ELEVATORS

Send for Illustrated Circulars.

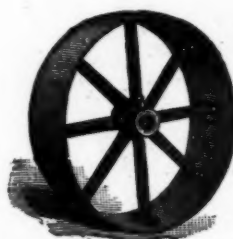
MORSE ELEVATOR WORKS.
MORSE, WILLIAMS & CO. Successors to CLEM & MORSE
Manufacturers and Builders of HYDRAULIC STEAM, BELT and Hand-Power, PASSENGER and FREIGHT **ELEVATORS** With most approved Safety Devices, Dumb-Waiters, Automatic Hatch-Doors, &c.
Office: 411 CHERRY STREET, PHILADELPHIA, PA.
Works: FRANKFORD AVE., WILDEY & SHACKANAXON STS.
Branch Office, 108 Liberty Street, NEW YORK.



"ECLIPSE" "STRAIGHT LINE"
ROCK DRILLS, AIR COMPRESSORS,
Machinery for Tunneling, Grading, Mining, Quarrying, etc.

TEN COMPLETE TUNNELING PLANTS FURNISHED FOR SOUTH PENNA. RAILROAD, PA.

FOR CATALOGUES, ESTIMATES, &c., ADDRESS,
INGERSOLL ROCK DRILL CO., 10 Park Place, N. Y.
MORTON, REED & CO., Agents, Baltimore.



THE MEDART PATENT WROUGHT RIM PULLEY.

OVER 300,000 NOW IN USE. THE LIGHTEST, STRONGEST, BEST BALANCED and CHEAPEST in the WORLD.

Whole Pulleys from 9 inches to 120 inches diameter. Split Pulleys from 12 inches to 120 inches diameter. All widths of face up to 36 inches, crowning or straight, with single, double or triple sets of arms. Also Tight and Loose Pulleys. Absolute satisfaction guaranteed.

SHAFTING, HANGERS, COUPLINGS, &c.

MEDART PATENT PULLEY CO., 1206 TO 1214 N. MAIN STREET, ST. LOUIS, MO.
Stores: 99 to 101 W. Second St., Cincinnati. 24 & 26 S. Canal St., Chicago.

J. A. J. SHULTZ, President.

B. C. ALVORD, Secretary.

SHULTZ BELTING COMPANY, ST. LOUIS, MO.

Manufacturers of Shultz Patent Fulled Leather Belting, Lace and Picker Leather.

OUR BELTING is made of Leather, tanned on the surfaces only; the interior (which is the fibre and strength of the hide) is not tanned, but Rawhide fulled and softened by our patent process. Our belting is more pliable, and hugs the pulley better and transmits more power than any other Belt. It does not pull out at the laceholes or rivets. It stretches less than any other Belt. It works equally well for the largest Driving Belts or for the fastest running machinery and smallest pulleys. OUR LACE LEATHER is made of Rawhide, by our patent process, without any tanning and is stronger and will wear better than any other. WE ALSO MAKE THE BEST PICKER LEATHER and BELT GREASE IN THE COUNTRY. Satisfaction guaranteed.

Southern Agents—FRED. N. OGDEN, New Orleans, La.

J. H. COFFIN & CO., Memphis, Tenn.

J. L. LINDSAY, Richmond, Va.

WILLIAM READ & SONS,

107 Washington St., Boston, Mass.

Sole Agents for America for the Celebrated

ROYAL MAIL

Bicycles and Tricycles.

This is a Correct Cut of the ROYAL MAIL.



TIED TANGENT SPOKES.



Winning Tricycle "Royal Mail"

ROYAL MAIL holds the World's Record.

Fastest One Mile - - 2.30 by Prince.
Second Fastest - - 2.30 2-5.

No Other Wheel in the World holds two as fast records!

A Rigid, Superbly Built Bicycle!

We offer it as the Highest Quality Wheel brought to the States. Light Roadster, with Tangent Spokes, 36 lbs. Also, holds the American 100-mile record, and won many of the principal events in 1884 and 1885.

Good Agents Wanted in Every City for the ROYAL MAIL.

SEND STAMP FOR CIRCULAR BEFORE PURCHASING A MOUNT.

Won the Records for 1884 for
1-4, 1-2, 3-4, 1, 2, 3, 4, 5 miles!

Especially advantageous for country roads, as, the front wheel being on one side, the rough horse-path and stones and obstacles are easily passed over. Easy of access, especially for ladies.

—AGENTS FOR—

W. & C. SCOTT & SONS, London, Birmingham.

WE TAKE OTHER
Guns in Trade.



W. & C. SCOTT & SON'S
Block Safety Hammerless,

With Crystal Apertures showing position of hammers at a glance. Independent strikers. Locks can be taken off, as on any old-time gun, 20, 16, 12, 10 and 8-bore. We are meeting a great demand for these guns. Send Stamp for Circulars and Second-Hand List.

OTHER GUNS TAKEN IN TRADE.



W. & C. SCOTT & SON'S
Low Circular Hammer Gun.

Handsome Hammer Gun made Hammers completely below line of sight.
8, 10, 12, 16, 20 Bore.

Send Stamp for Circulars and List of High Grade Second-Hands.

Also All Other Makes: GREENER, LANG, LOVELAND & WADSWORTH, HARRINGTON & RICHARDSON, COLT, PARKER, DAVIS, L. C. SMITH, Etc., Etc.
RIFLES, REVOLVERS, SHELLS, WADS AND ALL SUPPLIES.
Send Stamp for our Circulars and List of High Cost Second-Hand Guns taken in Trade.

Wiswell Ore Pulverizer and Amalgamator Combined.

The cost of this Mill is much less than any other machine of sufficient capacity to do the same amount of work.

It requires less power to run it, (10-horse being sufficient.)

The wear and tear of the Mill is much less than any other Quartz Mill doing the same amount of work, and the quality of the work done by it is greatly superior to work done in any other Quartz Mill now in use.

It crushes to a uniform fineness and makes no slimes, so that no sizing is required for concentration.

The Mill is equally well adapted to crushing and pulverizing of all classes of ores, either for amalgamation or concentration, and will pulverize and amalgamate from one-half to one ton per hour, according to character of ore and fineness of screens.

With ordinary care there is no loss of mercury by flouing, and consequent loss of gold, as in most other Mills where mercury is used in the Mill.

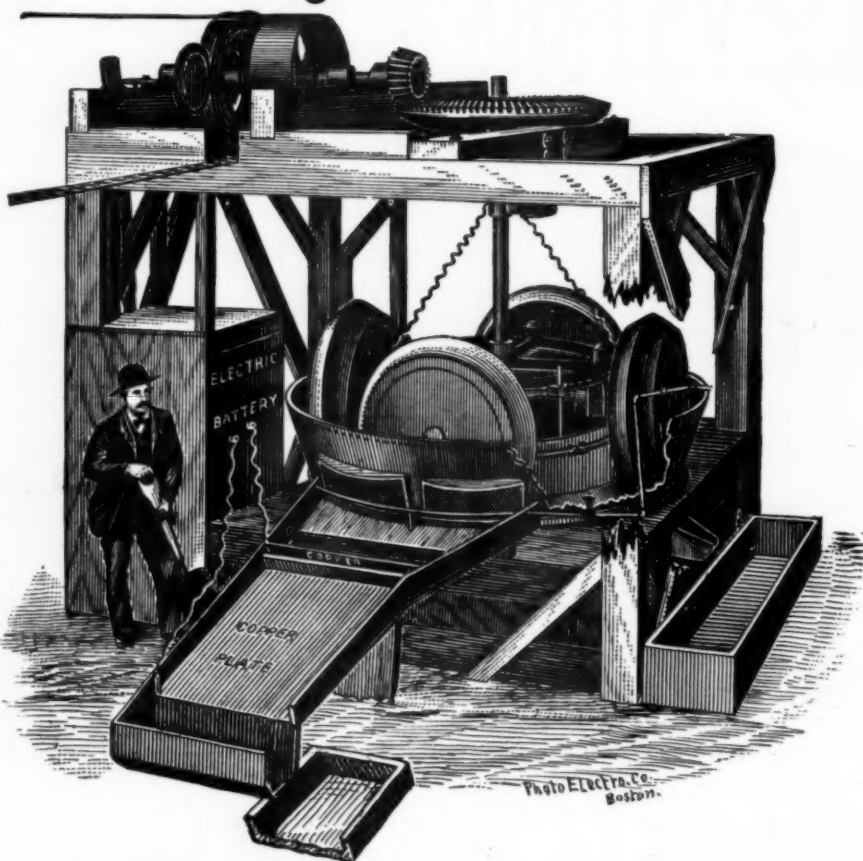
Amalgamation is carried on in the same operation with the crushing. The mercury is placed in the Mill in quantities varying from 10 to 40 pounds.

The application of electricity to the Mill for the purpose of cleaning and keeping the mercury alive has been to a very large extent superseded by the invention and introduction of the Mercury Trap in the Mill for the purpose of drawing off the mercury when charged with gold or on the slightest indication of flouing. By this ingenious device the mercury can be changed as often as desired without loss of time in either crushing or amalgamating. By opening this Trap the amalgam is discharged from the Mill in three minutes, and clean mercury introduced in its place.

To those familiar with running a Gold Mill this latter advantage will be greatly appreciated; in fact, it gives the mill-man full control of his work.

This Mill has been on exhibition at the foundry of Messrs. Bisbee & Endicott, at Chelsea, Mass., for the past 18 months, a good part of the time in active operation, and we have treated the most rebellious ores from many mining districts with most satisfactory results to the parties concerned.

The past year we have sold many Mills, which may be found in Michigan, North Carolina, Dakota, Montana, Idaho, Colorado, California, Mexico, Nova Scotia, etc. All those in operation are giving the most perfect satisfaction, as testimony will prove, and we will take pleasure in referring to any one of these on application.



We Furnish a Complete Mill for \$2,500, Delivered on Board Cars.

WISWELL ELECTRIC MINING MACHINERY COMPY,

A. A. REEVE, Treasurer.

4 POST-OFFICE SQUARE, BOSTON.

GET THE BEST.



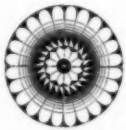
A Good Water Wheel Increases
the Value of Your
Whole Plant.

GET THE BEST AT FIRST AND AVOID THE
EXPENSE AND DELAY OF CHANGING
THE WHEELS.

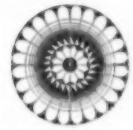
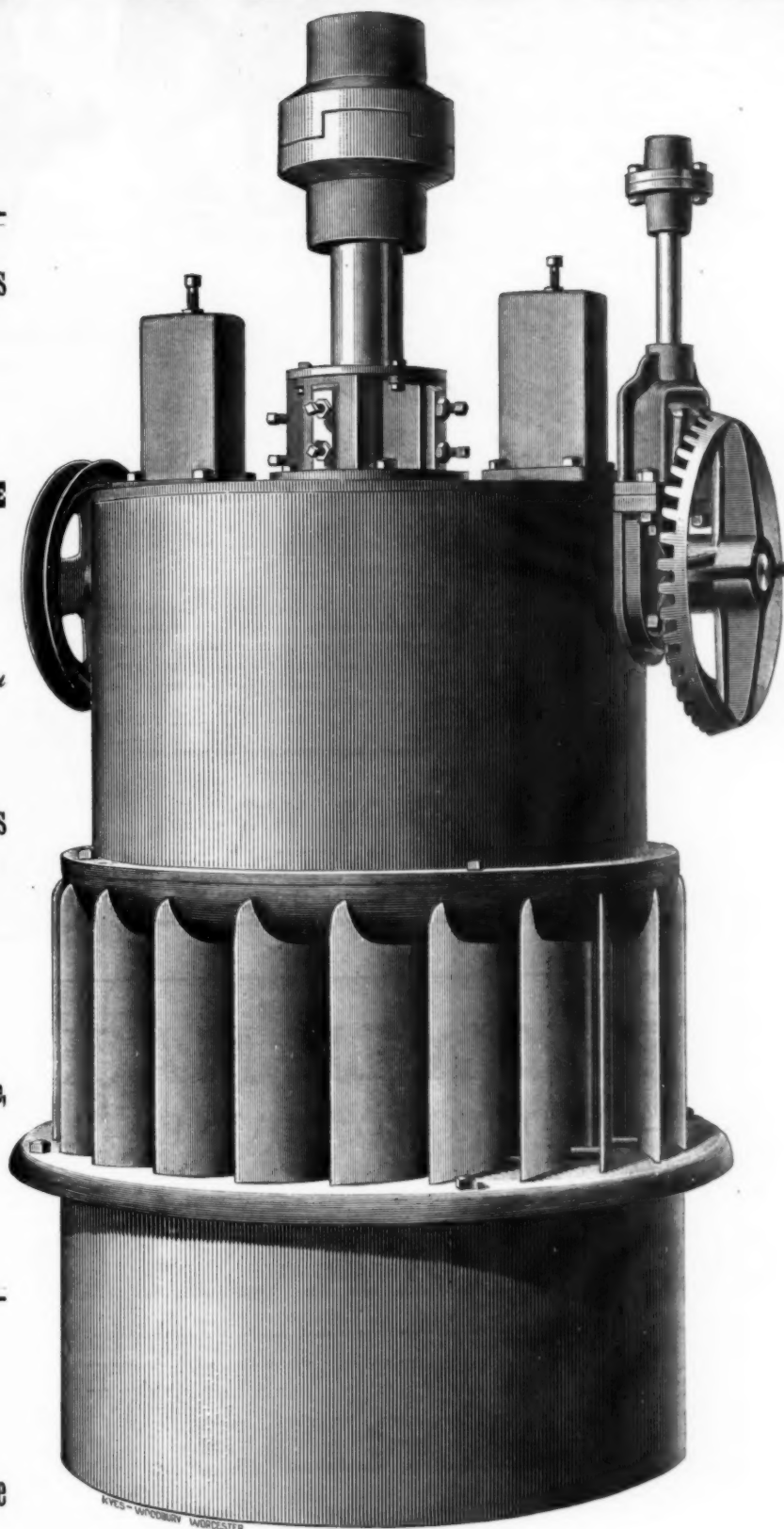
A Good Wheel Will Serve You
Well for Twenty Years.

THE BEST IS THE CHEAPEST. IT DOES
MORE WORK, LASTS LONGER, AND
COSTS NO MORE FOR GEARS
AND SETTING THAN A
COMMON WHEEL.

The Hercules Gives the Most Power for its Size,
and the Highest Average Percentage
from Full to One-Half Gate of
any Wheel Ever Made.



Below we give the Names of the



When it is considered that
the HOLYOKE WATER
POWER COMPANY test
every wheel that is put in in
Holyoke, and use the wheels
as a gauge or meter for mea-
suring the water to the
manufacturers and charge
them for the actual quantity
of water used, it will be seen
that the HERCULES stands
first in the estimation of
Holyoke manufacturers as an
economical wheel in the use
of water for the amount of
power produced. The HER-
CULES, we believe, is the
only wheel of which all the
sizes, both right and left hand,
have been tested, some of
them many times, and all
brought to the standard of
excellence which has been
set by the makers and de-
manded by their customers.



Mills in Holyoke, Mass., using

THE HERCULES WATER WHEELS

THE HEAD OF WATER ON THE WHEELS AND THE POWER FURNISHED BY THE HOLYOKE WATER POWER CO.:

	Diam. in inches.	Head on Wheels.	Horse Power.	Date of Setting.		Diam. in inches.	Head on Wheels.	Horse Power.	Date of Setting.		Diam. in inches.	Head on Wheels.	Horse Power.	Date of Setting.
Albion Paper Company.....	39	25	265	1878	Geo. R. Dickinson Paper Company...	36	19	170	1883	The Massasoit Paper Company.....	30	19	107	1883
Albion Paper Company.....	24	25	115	1883	Holyoke Water Power Company.....	30	19	115	1882	Union Paper Company.....	45	20	285	1882
Albion Paper Company.....	45	27	445	1880	Holyoke Warp Company.....	48	11	130	1879	Union Paper Company.....	30	20	125	1882
Albion Paper Company.....	30	27	200	1883	Massachusetts Screw Company.....	27	19	90	1882	Valley Paper Company.....	42	27	390	1882
Chemical Paper Company.....	4-30	23	620	1880	Merrick Thread Company.....	48	12	150	1880	Wauregan Paper Company.....	42	18	210	1879
Chemical Paper Company.....	5-18	23	275	1880	Newton Paper Company.....	48	21	350	1880	Wauregan Paper Company.....	33	18	130	1882
Chemical Paper Company.....	33	23	185	1880	Nonotuck Paper Company.....	48	29	570	1881	Whiting Paper Company.....	27	18	65	1882
Chemical Paper Company.....	42	23	305	1880	Nonotuck Paper Company.....	27	29	175	1881	Whiting Paper Company.....	18	15	30	1880
Chemical Paper Company.....	2-48	23	800	1880	Riverside Paper Company.....	48	20	325	1880	Winona Paper Company.....	48	26	540	1880
Connecticut River Pulp Company....	36	18	155	1881	Syms & Dudley Paper Company.....	45	29	495	1881	Winona Paper Company.....	24	26	135	1880
Crocker Paper Company.....	30	25	300	1883	Syms & Dudley Paper Company.....	24	29	140	1881					
Farr Alpaca Company.....	48	19	300	1878	Springfield Blanket Company.....	36	18	155	1877					
Franklin Paper Company.....	39	20	215	1883	The Beebe & Holbrook Paper Co....	24	19	75	1884					
Geo. R. Dickinson Paper Company....	2-45	19	520	1883										

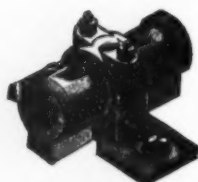
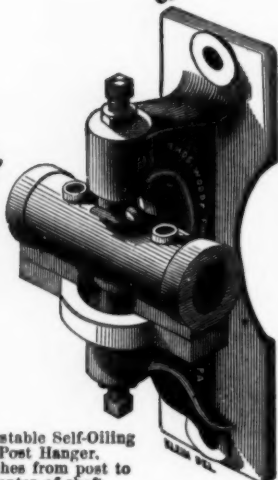
Increase since..... 9,797
Total 10,576

Send for
Catalogue
No. 3.

HOLYOKE MACHINE COMPANY, Worcester, Mass.



ADJUSTABLE SELF-OILING HANGER.

Ball and Socket
Self-Oiling Pillow Block.DOUBLE-BRACED ADJUSTABLE
SELF OILING HANGER.Adjustable Self-Oiling
Post Hanger.
6 inches from post to
center of shaft.Adjustable Self-Oiling
Post Hanger.
6 inches from post to
center of shaft.

FAIRMOUNT MACHINE WORKS.
Office, 2106 Wood St., Philadelphia.
THOMAS WOOD,
Manufacture as Specialties
Power Looms, Patent Bobbin or Quill
Winding Machines, Plain and Presser
Heaving Machines, Dyeing, Reeling,
or Spooling Machines, Dyeing, Reeling,
Securing, Gilling and Cal-
endering Machines.

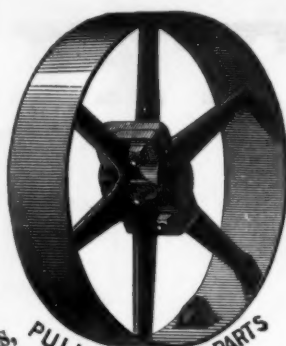
WARPING MILLS,
16, 18 and 20 Yards Circumference,
WITH IMPROVED HECKS.
SHAFTING,
With Patent
ADJUSTABLE SELF-OILING HANGERS,
8, 10, 12, 15, 18, 20, 24 and 30 in. drop.

Also WALL, POST AND GIDER HANGERS.
PATENT FRICTION PULLEY.
Pulleys from 4 inches to 10 feet in diameter.
PATENT HOISTING MACHINES.
Oil Presses for Lard, Fish and Paraffine.

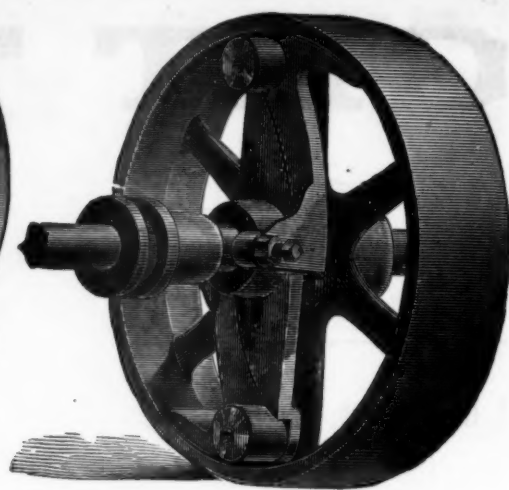
Special Driving,
such as Angular, Muley, and Gallows Driving,
furnished for any position
where possible to transmit power by belts.
PULLEYS from 4 inches to 10 feet in diameter.

Why use old style Bearings, that require oiling
every day, when you can get Bearings at less cost
that only require oiling once in Six Months, and
thus save oil and labor enough to pay for the bear-
ings in use. Test the matter for yourselves; a
trial always secures the trade.

ADDRESS,
THOS. WOOD,
Office, 2106 Wood St.
PHILADELPHIA, PENNA., U. S. A.

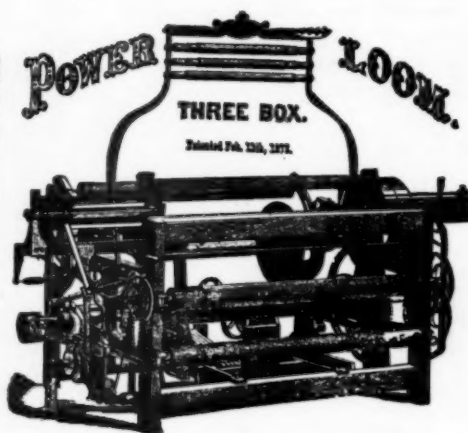


PULLEY IN TWO PARTS



PATENT FRICTION PULLEY.

Simple, reliable and very durable.
Suitable for any kind of driving, they
serve equally well as driver or driven.



SACO WATER-POWER MACHINE SHOP,

—BIDDEFORD, MAINE,—

Manufacturers of

COTTON * MACHINERY

OF THE MOST IMPROVED PATTERNS.

CARDS,

Cylinders, 36x36 and 36x30, with 20 tops and Self-Strippers and Railway Troughs. Union Cards, with workers, strippers and tops.

FINISHER RAILWAY HEADS.

DRAWING FRAMES, ANY LENGTH, WITH 3, 4 AND 5 LINES OF STEEL ROLLERS.

English Slubbers and Fly Frames, With Long or Short Bolsters.

—BOBBINS—

RING SPINNING FRAMES, 2, 1 $\frac{3}{4}$, 1 $\frac{5}{8}$ AND 1 $\frac{1}{2}$ INCH RINGS.

—TWISTERS.—

SELF-ACTING MULES, Parr, Sharp and Roberts' and Higgins' Pattern,

1 $\frac{1}{2}$, 1 $\frac{3}{8}$, 1 $\frac{1}{2}$, and 1 $\frac{1}{4}$ -inch Gauge.

S. W. RICHARDSON, Treasurer,

No. 1 Simmons Building, Boston.

JAS. H. McMULLAN, Agent,

Biddeford, Maine.

HOWARD & BULLOUGH, & RILEY,

BUILDERS AND IMPORTERS OF

COTTON MACHINERY.

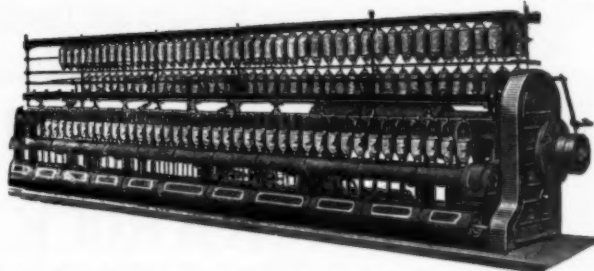
Wool, Worsted and Flax Machinery and English Card Clothing. Hardened and Tempered Steel Wire a Specialty.
MILL ENGINEERS. No. 19 PEARL STREET, BOSTON, MASS.

GREAT SUCCESS OF OUR
PATENT ELECTRIC STOP-MOTION,

ALREADY APPLIED TO OVER
10,000 DELIVERY HEADS OF DRAWING, AND
71,000 INTERMEDIATE ROVING SPINDLES.

The quality of Sliver produced by our Frames surpasses all others, and Waste, Single and Roller Laps are prevented, and production increased.

Correspondence Solicited. Send for Circulars.



SPECIALTIES:
EXHAUST OPENERS, LAPPERS, (LORD'S EVENERS,) IMPROVED ROLLER CARDS, PRODUCE MORE AND MAKE LESS WASTE THAN ANY OTHER.

7,000 SELF-STOPPING WARPERS, Already working with latest improvements.

800 CYLINDER SLASHERS Now at work in America alone

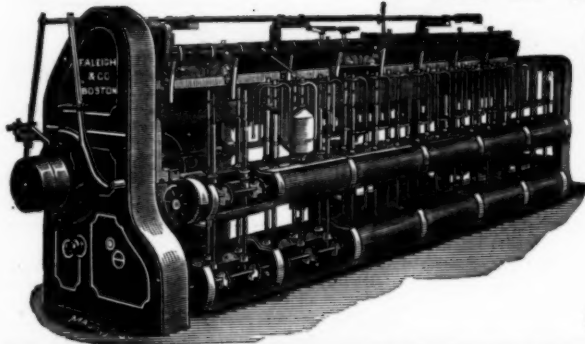
Patent and plain Spindle, Spinning and Twisting Frames, Spoilers, Reels and Circular Warpings, Cloth Folders, Size Kettles plain and Fancy Looms, Spindles, Flyers and Fluted Rolls.

SLUBBING AND ROVING FRAMES WITH LATEST AND BEST IMPROVEMENTS.

F. A. LEIGH & CO.

Importers of Mill Machinery,

—No. 40 WATER STREET, BOSTON, MASS.—



Openers, * Lappers, * Cards, * Drawing,
Slubbing and Roving Frames,
CARD CLOTHING, ETC.

Correspondence Solicited. Send for Circulars.



GANDY'S PATENT MACHINE BELTING

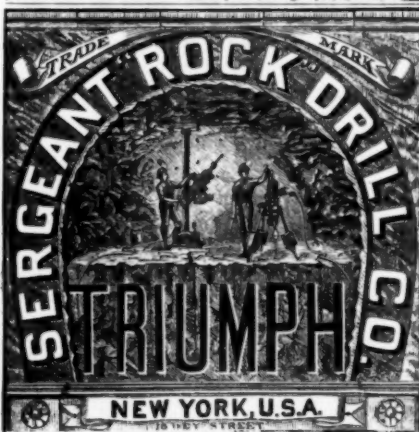
GOLD MEDAL AWARDED NEW ORLEANS, 1885, FOR BEST RUNNING BELTS.

Made PERFECTLY Straight and any Length without Joints.

For Main Driving it is the Best. Much Cheaper Than Leather.

MANUFACTURED BY

THE GANDY BELTING CO., BALTIMORE, MD.



THE "TRIUMPH" ROCK DRILL

and NORWALK AIR COMPRESSOR

Are the Latest and Most Improved Machines that were ever designed for the work required of them. They are the Most Simple, Economical and Effective now known, and will satisfy all Purchasers.

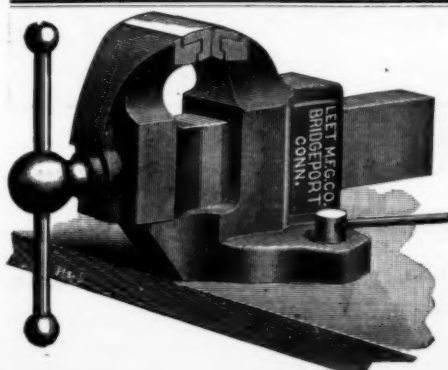
Boilers, Steam Pumps, Hoisting Engines, Pipe and Fittings, Electric

Blasting Apparatus, Powder, Caps and Fuse, Steam and Air Hose, Wire Rope,

—And General Mining and Contractors' Supplies.—

Complete Specifications for Rock Drilling and Mining Plants Furnished on Application.

SERGEANT DRILL CO., 16 Dey Street, New York, U. S. A.

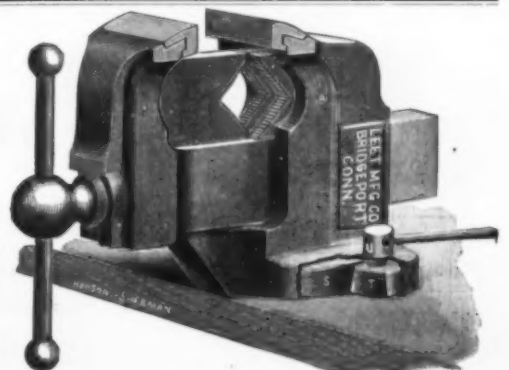


THE LEET M'FG CO.'S Patent Sliding Jaw Bench Vises.

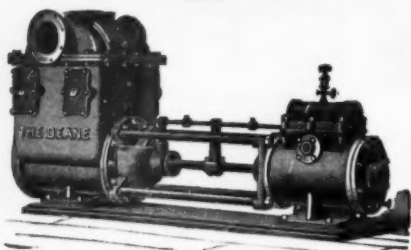
WITH SWIVEL BOTTOM.

These Vises can be used either as a Sliding Jaw or a common Screw Vise by simply turning in or out the small screw in backside of the head or base. It will hold work with a more powerful grip than any other Vise. The screw will never work loose when either chipping or filing. The workmanship is perfect; all the working parts are made of steel and interchangeable. Sold by all Hardware Dealers. Send for Descriptive Circular and Price List to

C. D. LEET, Bridgeport, Conn.



THE DEANE STEAM PUMP CO., HOLYOKE, MASS.



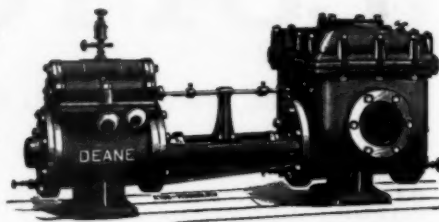
MANUFACTURE
Every variety of Pumping Machinery

VACUUM PUMPS FOR SUGAR WORK, ETC.

IRRIGATION PUMPS ARE SPECIALTIES.

Water Works Pumping Engines for Cities and Towns.

SEND FOR NEW ILLUSTRATED CATALOGUE No. 22.



RENDROCK POWDER COMP'Y,

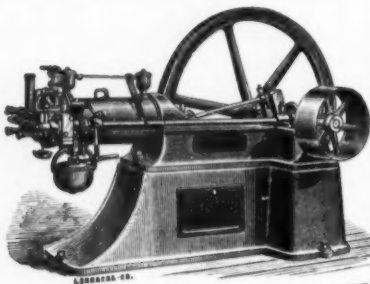
MANUFACTURER OF THE INGREDIENTS
OF THE NEW PATENT BLASTING POWDER:

RACKAROCK.

IT CONTAINS NEITHER GLYCERINE NOR
NITRO-GLYCERINE IN ANY FORM.

It Does Not Freeze. Can be shipped by express, railway or steamship lines. Neither of the two ingredients are explosive until combined, and when combined are safer than Dynamite. This explosive approximates Nitro-Glycerine in strength. Send for circulars to

RENDROCK POWDER CO., 23 Park Place, New York.



Over 14,000 in Use.

Otto Gas Engine

20 to 70 per ct. less Gas
consumption than
ANY other ENGINE.

Working Without Boiler, Steam, Coal, Ashes or Attendance.

Started instantly by a Match, it gives full power immediately. When stopped, all expense ceases.

No explosions, no fires nor cinders, no gauges, no pumps, no engineer or other attendant while running. Recommended by insurance companies. UNSURPASSED IN EVERY RESPECT for hoisting in warehouses, printing, ventilating, running small shops, &c. Sizes: 1 to 25-horse power.

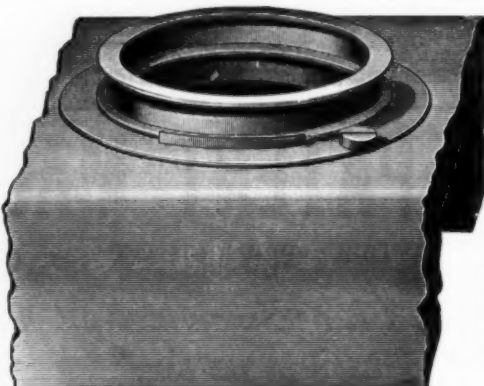
Branch Office, 214 Randolph St., Chicago.

SCHLEICHER, SCHUMM & CO., N. E. cor. 33d and Walnut Sts., Philadelphia.

DOUBLE ADJUSTABLE Spinning Rings.

GEORGE DRAPER & SONS,
HOPEDALE, MASS.

TELEGRAPH ADDRESS AND RAILROAD STATION,
MILFORD, MASS.



	Number of Rings sold.	Number of Rings sold for repairs.
1869.....	6,025	
1870.....	20,258	
1871.....	38,648	
1872.....	94,264	12
1873.....	117,301	
1874.....	168,382	500
1875.....	223,924	963
1876.....	185,319	947
1877.....	270,811	946
1878.....	215,214	3,309
1879.....	336,918	8,007
1880.....	567,860	11,264
1881.....	659,730	8,974
1882.....	636,715	22,315
1883.....	416,500	21,689
1884.....	319,869	25,105
1885, 5 mos. 112,522.....	12,118	
Total number sold in 16 years.....	4,390,260	116,349
Total number in use.....	4,273,911.	

The great durability of our Rings is shown by the fact that we have more rings in use over twelve years old than all we have sold for repairs.

This statement shows unmistakably that a mill once supplied with our rings need think but little of the cost of repairs. As the number sold for repairs is an average of about twenty per cent. of the number sold the tenth year before, the average life of our rings will be at least twelve years.

Do not make the mistake of ordering new frames without specifying Double and Adjustable Rings. While they cost more to begin with, they are much the cheapest in the end, on account of their uniform excellent quality and unparalleled durability.

As an encouragement to use none but the best of Rings, we have decided to reduce the price on and after the first day of January, 1885, of those 1 1/2 inches or less in diameter, without holders and screws, to be used only to take the place of our rings worn out, to 25 cents each.

Washburn & Moen Manufacturing Co., Worcester, Mass.

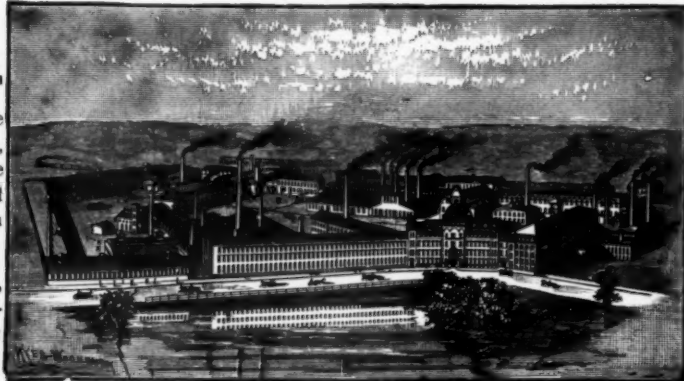
Wire Drawers, and Manufacturers of Iron and Steel Wire of Every Description.



Iron and Steel Telegraph
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BALTIMORE, SEPTEMBER 26, 1885.

THE signs multiply, says the Charleston News and Courier, that the long-looked-for revival of business is come at last. There is strength and hopefulness in every department of trade, and the great iron interests of the country find the prospect so much improved that furnaces, rolling mills and other iron works which have been idle for years have either rekindled their fires already or are preparing to do so at once. The most gratifying feature of the revival is that it is everywhere acknowledged that the greatest progress of the year will be made in the Southern States, where, with superb crops and fair prices and with the people in fair condition financially, there ought to be such a season of prosperity as has not been known before for very many years, if ever.

THE Anniston (Ala.) Cotton Manufacturing Company, whose large mill was shut down several months ago owing to the scarcity and high price of cotton, and also for the purpose of being thoroughly over-hauled and having the machinery put in the best order, will start their mill up again in a week or two. This mill is now in fine condition. It has nearly 12,000 spindles, and will afford employment to a large number of hands thus helping to make business more active in Anniston. Several other Southern cotton mills have also decided to resume work at once; and the managers of one mill have just voted to spend \$20,000 for new machinery. With good machinery and good management Southern cotton mills will soon be paying good dividends again.

A Big Thing for Virginia.

Mr. Thomas Breen, of Knowlton, Pa., has for a year or more been quietly working up a company to manufacture steel and composite brass somewhere in the South. After securing the co-operation of some well-known capitalists, he made a personal investigation of the resources of the iron regions of the South, and after a careful examination decided to locate the proposed works in Southwest Virginia. He has now purchased in fee 18,000 acres of land in Bland county, and is negotiating for 10,000 acres more. The company will shortly be incorporated in Pennsylvania, and the preliminary work of cutting the timber, opening the mines, &c., will be commenced this fall, to be followed as soon as the necessary railroad facilities can be secured, by the erection of two large furnaces to make steel and composite brass. The capacity of these furnaces will be 100,000 tons a year, and the investment by the company will be about \$2,250,000.

In conversation with Mr. Breen he stated that the southwest portion of Virginia, including Bland, Tazewell, and several other counties, was the finest mineral and timber country he had ever seen, either in the United States or in England. The ore, coal and timber, he says, are magnificent; the ore being superior to any that he had ever been able to find before, though having 25 years experience in the iron trade. Among the capitalists interested in this enterprise are some wealthy Pennsylvania iron manufacturers, whose names, however, we are not at liberty to make public yet, and also some Baltimore capitalists.

An Industry That Ought to be Developed in The South.

It is somewhat strange that in the general development of the industrial interests of the South, comparatively little attention has been given to the manufacture of paper. This is an industry to which the attention of the people of the South might be profitably turned. There are peculiar advantages possessed by some of the Southern States for manufacturing paper that ought to be utilized. Having not far from one-third of the total population of the country, the South has less than one twenty-fifth of the capital invested in making paper. It is true that the consumption of paper in the South is not as large, in proportion to population, as in the North, but it is large enough to furnish a market for enormous quantities of Northern and Western made paper. In 1880 there were 767 establishments engaged in the various branches of the paper business, employing a capital of over \$49,900,000 and producing nearly \$62,000,000 worth of paper. Of this immense business the South's share consisted of 45 paper mills having a capital of \$1,810,000 with \$2,500,000 as the value of paper made. Since 1880

the increase in this industry has been mainly in the North and West, and the South's proportion is probably even less than then. For nearly all the newspapers printed in the South, as well as for nearly all other purposes for which it is used, paper must be purchased in the North. There is an opening in the South for the profitable employment of capital in the establishment of paper mills and we hope to see more attention given to this matter. It is a subject in which the newspapers of the South are particularly interested, and they can do much towards helping on this line of industrial growth, by calling attention to the advantages possessed for this business by the various locations in which there are good openings for paper mills.

OUR coasting trade is strictly protected. No foreign vessel can engage in it. American-built vessels have the trade exclusively. And yet the coasting trade, in our own hands, is in a bad way at present. Even in this, where the advocates of lower tariff stop, the evils of protection make themselves felt. Favored by a monopoly of the coast trade, the Northern shippers have turned out more vessels than there is a necessity for. We have two vessels where one is sufficient, and yet where water transportation is most needed—as from Baltimore to Charleston—we cannot get money enough to build a steamer. The consequence of this overbuilding of sail vessels at the North is that ships lie idle at their wharves, and the owners of vessels in service often take cargoes at prices that will not leave much, if any, profit over expenses.—*Baltimore Sun*.

Now will the Sun please tell us what has produced the depression in the shipping interest in Great Britain? If protection has caused an over-production of American coasting vessels, has free trade produced exactly the same thing in Great Britain? Certainly no one at all conversant with the shipping interests of the world will pretend to say that the depression in the American coasting trade is near so bad as is the depression in the shipping interests of Great Britain. Protection has made coasting vessels unprofitable, has it? Well, what has made English vessel property so unprofitable that for several years hundreds of large costly steamships have been laid up at British shipping centers, while very few owners of British steamers, even those in regular lines, have made any money for two or three years? Why was it that only a few weeks ago a British steamship was chartered to carry 90,000 bushels of grain from this country to England at one cent a bushel? An American coasting vessel would not accept such a rate for a trip of a hundred miles. The building of steamers in free-trade Great Britain has been so overdone that for hundreds of them no employment whatever can be found, and millions and tens of millions of dollars invested in this property are not only not yielding one dollar of revenue, but are causing a steady drain through the non-employment of the steamers, their depreciation in value, &c. The comparatively

few steamers that are able to secure business are compelled to accept it at rates that in most cases will hardly cover their actual expenses, and in many instances at rates that do not begin to do even this. These are facts that cannot be questioned. They are not simply some one's views as to free-trade or protection. The ship-building business of great Britain, as every one—English and American—knows, has been largely overdone. There has, in fact, been an enormous over-production of steamers. There is no business for them; they are laid up at the docks idle for months at a time, and many of them for a year or more. Now what has caused it? Has free-trade done it? Does free trade in England produce exactly the same results there that our free-trade friends claim is produced in America by protection?

Busy Times in New England.

A dispatch from Boston says: "From all over New England there come reports of a great revival in manufacturing industries. In Maine several new shoe factories are being constructed, and the cotton mills are running on larger orders. The lumbering interest promises to be larger than usual this winter. Some new pulp and paper mills are being constructed, and work has been resumed in some small 'points' and iron mines. In New Hampshire, Manchester shows great improvement. The Amoskeag corporation has just given out a contract for a large new mill. The hosiery and cotton mills and the car works of Lecoria and Lake Village report heavy orders. In Massachusetts there is a general revival in the shoe factories of Lynn and Haverhill. There has been increased demand for help at higher wages. Bracton and Holyoke are growing rapidly. In Lawrence the old Washington mills are to start with 300 hands, and the Atlantic mills are running on full time with a full force. The large cutlery works at Shelburne Falls will resume soon on full time. North Adams, Springfield, Westfield, Pittsfield, Marlboro', Fitchburg, and Worcester make a good showing. In Rhode Island there is increasing activity in Providence, Pawtucket, Valley Falls and Westerly. In Connecticut, New London, Stafford Springs, Hartford, New Haven, Meriden, New Britain, Norwalk and Waterbury are improving, while Norwich is exceedingly dull. In Vermont, Brattleboro' is booming, and the marble and slate industries of Rutland are more active than for some time past."

THE Georgia Senate, by a vote of 24 to 15, has passed the bill modifying the powers of the State railroad commission. This act of justice to the railroads will be of vast benefit to the State if the House passes the bill.

The Relations of Labor and Capital.

At the Halifax meeting of the American Institute of Mining Engineers, September 15th, 1885. Mr. James C. Bayles, president, delivered an address upon the existing relations of labor and capital in the United States, from which we take following extracts:

*** However blind one may be to the spread and influence of socialistic teachings, there is little excuse for persistence in cherishing the idea that the wage-earner has no cause for dissatisfaction with the present unequal and unequitable distribution of the products of industry, or that his proper duty in life is to imitate the excellent example of the pious shepherd of Salisbury Plain, who derived supreme contentment from the fact that a kind Providence had vouchsafed him salt to eat with his potatoes. Since the French Revolution, which, with all its excesses and horrors, was the natural and legitimate outcome of causes inherent in a vicious and artificial social organization, there has been a steady, and of late a rapid, progress of the socialistic movement. More general education, a free press and organization for resistance or aggression have been the agencies by which the working classes have gained clearer ideas of their power and opportunities. The dull despair of mediæval servitude has given place to an intelligent and profound discontent with a situation which every year seems to make more hopeless; and I do not hesitate to venture the opinion that, unless strong and willing hands are extended to lift them up, they will again and again reach from the mire to pull down and destroy that which they cannot attain unaided. Blind Samson may stand chained, but, if he shall bend himself upon the pillars against which he leans in sullen silence, the whole superstructure of society will come crashing to the ground; and nothing will restrain his purpose, should the mood seize him, even though that which he destroys must inevitably fall upon him and crush him. ***

It is undoubtedly true that in no country of the world has the man with labor to sell so free a market in which to sell it as in America. The country is yet comparatively new, and there is still so much land open to settlement that mouths have not yet begun to multiply more rapidly than food. There are so many examples in which, under favoring conditions, industry and thrift have secured to the wage-earner independence, and even wealth, that those of us who have never known from personal experience what it is to overcome the difficulties which beset the mechanic in his struggle for self-improvement and social advancement, are very free with good advice for those who ask it, as well as for those who do not. But there is good reason to suppose that we know very little of the actual situation of the average workingman, and that we have no adequate conception of the strength of the cords which bind him down in the place which our industrial system has made for him. If Daniel Webster was right when he uttered the prophetic warning—"the freest Government cannot long endure when the tendency of the law is to create a rapid accumulation of property in the hands of a few, and to render the masses of the people poor and dependent"—we may with propriety consider whether even the foundations of the Republic are not menaced by the tendencies of the times.

In considering the position of the working-man we must remember that the progress of half a century has closed to him many of the doors which once stood open to industry and thrift. The high perfection of the machinery employed in all branches of production has of necessity destroyed the apprentice system, or at least so much of it as was advantageous to the apprentice. The young man upon whom devolves the necessity of self-support has not one chance

in a hundred to learn a trade. He can and does learn a part of it, but, beyond acquiring a general familiarity with one or two operations in an industrial process, he reaches man's estate with very little more knowledge of the trade he has undertaken to master than he had when he began. His chances of gaining the comprehensive knowledge which is needed to fit him for advancement to responsible positions of management and direction are so small that they may be said to be as nothing. His early education was such as boys without home advantages are likely to gain in the free schools, and of this he will retain only the elements. He can read, write and compute in the four simple rules of arithmetic; but his mind is untrained, and unless he has a strong natural bent for study there is little likelihood of his supplementing the deficiencies of his education by systematic and profitable reading. Were he disposed to do this, he could not find the books which would serve his purpose. Even elementary works presume a greater knowledge than his, and if he should make the attempt, as thousands of ambitious young mechanics have done, to improve his mind by reading the text-books of his trade, he would abandon the task as thousands have before him, because between him and the beginnings of technical literature there is a gulf which he finds impassable. He knows his daily work and it yields him a support. The future is before him—full of hope, perhaps, but offering no tangible goal for his ambition. Restless and dissatisfied he seeks change and usually finds it in marrying. He selects a wife from his own class—ignorant like himself, without purpose in life other or different from his own. His earnings will support a wife, living as the people of his class live, and he cuts off the slight remaining chance of bettering his condition by anchoring himself in the sphere to which he was born. The children which come to him are dear to his heart, but every one added to the number is only another millstone about the neck of his ambition. His home may be as happy and as comfortable as a virtuous and industrious wife can make it with the slender resources at her command, but it is cramped and crowded, and the ever-present cradle is an obstacle to self-improvement which only genius can overcome. His youthful ambition matures into the hope that he will be able to earn food and shelter for his dependents. He realizes, however, that he is but a part of the great industrial machine, and that forces are as far beyond his individual control as those which hold the planets in their orbits determine whether he shall ever attain the measure of even this reasonable hope. He works when it serves the purpose of capital that he shall work; he stands idle when capital orders production to stop. His savings in times of prosperity are consumed in times of depression, and the debts then incurred become a mortgage upon his future. His children have no brighter outlook than he had. As they grow up each in turn must help carry the burden. Of what use is to him to know that in the far West there are unmeasured acres of fertile land, and that he may have a farm for the asking? How shall he get there? How can he bridge the interval between leaving the daily work which feeds his family and reaping the harvest which that land would yield? How shall he build his house and barn and provide the implements of husbandry? Who will teach him how to break the virgin soil and plant the fruitful seed? He can no more escape from the servitude of his trade, whatever its vicissitudes, than he could from the obligations which his marriage has entailed. He is a free citizen of a free country, but the iron collar of "Gurth, Born Thrall of Cedric the Saxon," was lighter and more easily borne than are the shackles with which the exigent demands of his daily life have bound him hand and foot. His is not an isolated case. He is a type, and in con-

sidering his situation we have considered the situation of millions like him.

The wage-earner may be ignorant of science and the arts, and the sum of his exact knowledge may be only that which he has gained in his closely-circumscribed daily toil; but he is not blind, and his thoughts do not take the shape of daily and hourly thanksgiving that his situation is not worse than it is. He sees on every side the lavish display of wealth in which he has no part. He sees a large and growing class enjoying inherited abundance. He sees miles of costly residences each occupied by fewer people than are crowded into single rooms of the tenement in which he lives. He cannot fail to reason that there must be something wrong in a system which effects such unequal distribution of the wealth created by labor. In the union, which is his only defense against the oppression of individual or corporate greed, he meets the thousand others who, like himself, feel that their only hope is in destroying the existing relations of labor and capital and substituting for them a better and more equitable system of joint participation in the profits of production. He may reason wrongly, but it does not help the matter to tell him so. He may act on wrong impulses, but if repressed and defeated he will try again. The discontent and unrest of the working classes is to society as at present organized what Vesuvius was to Pompeii. When the pent forces burst their bonds asunder, who shall predict the consequences? The impulse to pull down and destroy and to create equality in suffering, because no other equality is possible, does not now exist as a purpose; but scarcely a year passes without giving evidence that it may flash into instant action, and that in the discontent of the working classes we have the potentialities of inestimable catastrophe.

As is always true in such cases, there is another duty than that involved in the repression of lawlessness created by the incendiary teachings of demagogues. The hopelessness of the position of the average wage-earner consists in his ignorance. The progress of the arts has been so rapid that few men in starting life without education are able to keep pace with them, or, indeed, to acquire familiarity with principles that they can hope to attain to responsible positions of management. While the sphere of those born to serve has been thus steadily narrowing, the sphere of those so fortunately situated that they have been able to acquire liberal education is steadily broadening. The capitalist is rarely safe in intrusting his interests in mining or manufacturing to the merely practical man. Success in business enterprises of every kind now depends upon so many things of which the merely practical man knows little or nothing, that management is usually intrusted to the man who combines education and experience, and his staff of responsible assistants is made up of young men of education who take subordinate positions to gain experience. It is in our great industries as much as it is in the army. As vacancies are created among company officers they are filled by graduates from West Point, of which the supply usually exceeds the number of vacancies to be filled. Promotions from the ranks are infrequent, and properly so, for in the ranks are found very few men in any respect fitted to discharge the duties devolving upon commissioned officers, and they would be out of place among the educated men who have been trained to command. The soldier must grow gray in honorable service, but the highest to which he can attain is the chevron of a non-commissioned officer, which entails added duties and responsibilities without bringing release from any of the restraints and limitations which the rules of the service impose upon enlisted men. It is so to a great extent in our productive industries, with the important difference that the wage-earner's term of service is never at an end. His future, in all but exceptional

instances, promises nothing better than continuance in the labor he has learned, as a competitor with machinery which may at any time displace him and force him to seek other and perhaps less congenial employment, or starve. An industrial system which considers only the volume and economy of production has cut him off from the chance of learning the trade at which he works, and the schools from which he and his children can derive no benefit are furnishing graduates whose superior fitness for organization and management close to him every avenue of advancement. To dispense with the little skill he has gained is the constant aim of his superiors, and he can never know when arms of iron that tire not, and fingers of steel that work with mechanical precision, shall come to take his place, or when the progress of science shall discover ways of rendering his knowledge of no further use. Is it to be wondered at that such a man is discontented and restless, and if it is left to him to solve the great problem of a satisfactory readjustment of the relations of the classes, he will try impracticable and dangerous methods, knowing no others. He has a grievance in the misfortune of birth under conditions which have given him little or no chance for self-improvement, and he rebels against his fate. ***

I have no plan to suggest. One may well be distrustful of everything in the shape of off-hand solutions of a problem so complex and profound as that to which I have called attention. Each of us for whom it has a direct and personal concern must study it from his own point of view. He has little reason to hope that, like *Edipos* in the fable, he will guess this riddle of the Sphinx; but that he can do something to establish more cordial relations between labor and capital, and to create that community of interest which long ago ceased to exist between them, is more than probable. My own idea of the first step in this direction should be a more conspicuous recognition of individual worth and capacity. A plan which deals with men by classes tends to destroy the incentive individual effort to excel. Obviously, it is the interest of capital to hold out all reasonable incentives to those who have the ambition to rise above the average of their fellows, by making such self-advancement profitable. The trade union tends to the establishment of an equality on the level of a low average; it will lose its power only when men who grade above the average secure a recognition and a protection from capital which leaves them nothing to expect at the hands of those whom they have left behind, content with a lower plane of skill and efficiency. In no other way can the ambition of young men in the ranks of labor be quickened, than to open for them a way in which they can secure an alliance with those who represent the power of capital, as the reward of zealous and intelligent service. What should be the second step would depend very much upon conditions necessarily local and perhaps temporary. I do not doubt, however, that, wherever the desire exists to do something for the benefit of labor, the means will suggest themselves in conference with those in the ranks of the workingmen whose counsel may be sought with advantage. We may dismiss from our minds all the dreams of the advanced socialists, and venture no impracticable experiments. We need recognize no rights as belonging to the working classes other than those which enlightened self-interest prompts us to concede. But within this safe territory of the practicable and the expedient we can find many opportunities for broad and intelligent philanthropy, which will be fruitful of good results in readjusting the relations of the great social classes upon a safer and more stable basis. No one need consider unworthy of his most serious study a problem which in its many phases has commanded the profoundest consideration of some of the greatest mir-

of the century; no one need hope for any other solution of it than will be found in well-considered and wisely-directed personal effort within the narrow spheres of individual influence. To the question "Am I my brother's keeper?" each of us who stands toward labor in the position of employer must answer "Yes." What is the nature and extent of our responsibility, each must consider for himself; but if the narrow selfishness of greed shall bid us make our heart as a mill stone and set our faces as flint against the dictates of duty and self-interest, we shall inevitably discover when too late, that the smoldering spirit of revolution is a consuming fire.

Extinguishing Fire by Automatic Appliances.

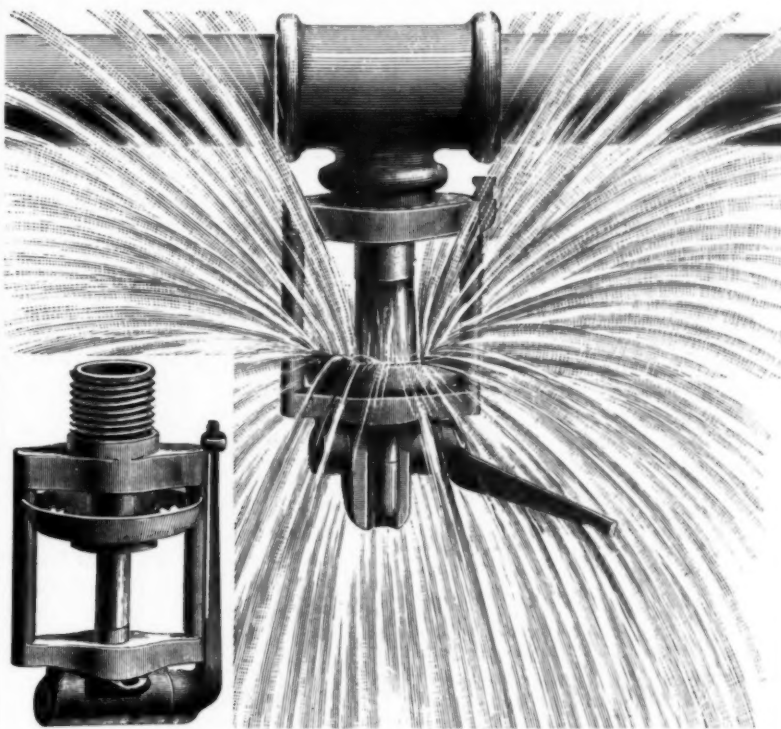
Insurance rates are so high in many places in the South, where mills are not protected by an abundant water supply, that it is, in that section especially, a matter of great importance to devise some means whereby the cost of insurance can be reduced. This has already been done by many companies that have placed automatic sprinklers in their mills, but the great majority of all manufacturing establishments in the South are still without this important protection against fire. It is obvious that to subdue a fire and prevent an extensive conflagration, the earliest time is the best time. The self-acting sprinkler is the only means known by which the needful quantity of water can be kept constantly ready to put out the small fire at any time, day or night, when called for. In fact, by means of these sprinklers the fire is made to put itself out, for the heat softens the alloy which keeps the valve closed and thus allows it to open and do its work.

The Walworth Strong Sensitive Link Sprinkler, it is stated, has many advantages over any in the market, and has overcome the constant danger of the sprinklers leaking or bursting from high pressure or water hammer, causing great inconvenience and loss, for which there is no redress. Each sprinkler is a valve or stop-cock of itself, and can be opened and closed at will. The valve holding back the water rests upon the short arm of a pivoted lever, the long arm being held to the frame by a link which can be either made of brass, soldered with fusible solder, or cast from fusible alloy. The great advantage of the link device must be plain to everyone. If a sprinkler goes off either by accident or fire it can be closed at once, a new link put on and be as good as new. Manufacturers having other sprinklers in their buildings and seeing the need of such an improvement have given this the preference. It is plain that where one can not close each sprinkler by itself the water damage must be large even after the main valve is closed, as the water above the opened sprinklers will run out. Another advantage is in placing the fusible link above the water, averting the greatest danger to which sprinklers having the solder below the water are subject. Two sets of the link sprinklers have been sold to one of the largest cotton manufacturers, who had witnessed a fire in a neighboring mill where two sprinklers having the solder at the lowest point below the water jet were only partly opened, allowing the water to seal them. The fire was finally extinguished by other means. It is by no means settled that time does not change the fusible alloy; if so, new links can be put on at little cost or trouble. If for any reason the water is to be drawn from the pipes, the sprinklers on the end of each line must necessarily be opened; in this sprinkler it is simply necessary to remove the link and open sprinklers.

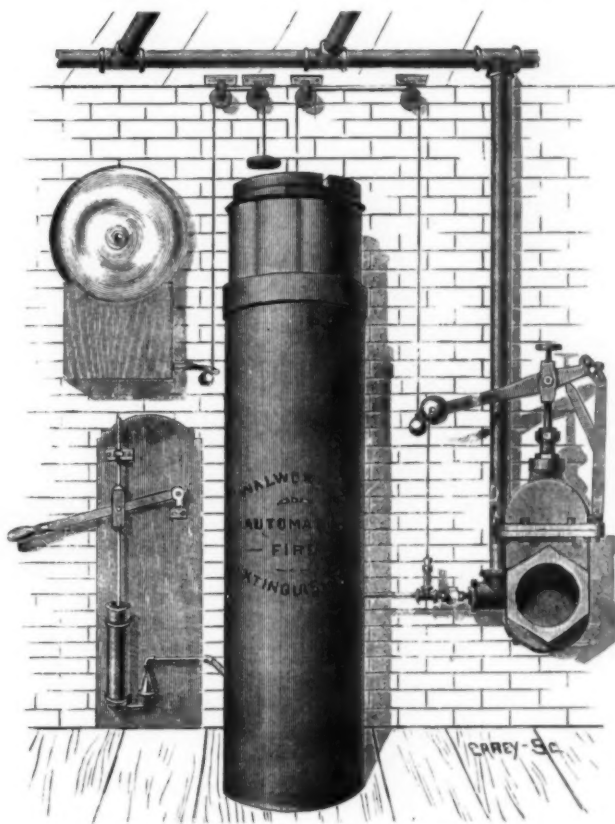
The manufacturers of this sprinkler say: "The screw valve is the strongest device known in hydraulics to resist the highest pressure. The Walworth Sprinkler uses this device. The pressure is regulated by a diaphragm and all the parts are strong enough to stand all possible pressure to which sprink-

lers are subject, and yet so sensitive as to go off at the lowest admissible temperature. The regulating screw is covered with the short arm of the lever, thus protecting it from abuse by unskilled workmen. In case it becomes necessary to add pressure to the valve a support can be placed under the valve, resting upon the frame below, the link removed and the lever turned back, uncovering the regulating screw, which can be turned up a half thread or so, as may be needed, then with the fingers place the lever in position and put on the link, which can be done

both pipe and fittings; such as a combination of wires, which would invariably break; such as a heavy pressure of air which no ordinary system of piping could stand without leaking. The object of this prelude is to call attention to the Walworth patent dry pipe system. By this system the pipes are filled with compressed air under a pressure of one pound to the square inch. Attached to the pipes is an airometer, the inner tank having a weight upon it of 100 pounds. This tank and weight is raised by the compressed air, and as soon as a sprinkler is opened the



THE WALWORTH STRONG AND SENSITIVE SPRINKLER.



THE WALWORTH DRY PIPE SYSTEM.

and made tight under a pressure of 500 lbs. The Walworth Sprinkler is accepted and approved by all Factory Mutual Fire Insurance Companies of the East and West.

Immediately following the adoption of automatic sprinklers to replace the old system, the question arose, 'how can the pipes and sprinklers be kept thoroughly free from danger of freezing?' In cold places water in the pipes would be simply impossible, and shutting the water off by a common valve would cease to make the system automatic. Many devices were suggested, such as chemicals, which would soon corrode and destroy

pressure being released allows the tank and weight to fall, thus opening a valve and either starting the pump or releasing the water from the tank or street mains. It is so arranged that an alarm will sound just before the valve is to be opened, notifying that there is a fire or that more air must be pumped. The entire supply of air can be produced by a few strokes of the air pump."

As an illustration of the effective work of these sprinklers, we append the following letter:

MESSRS. WALWORTH MFG. CO.:

Gentlemen—On Sunday evening, fire was

discovered in our engine room, and in five minutes had worked its way through a belt box to the fourth floor. For a few minutes it looked as if the place must go, but the automatic heads on each floor near the fire went off and quickly extinguished it without assistance from hose or anything else. Had there been sprinklers in the engine room, fire could not have got beyond it, and we will be pleased to have you put them in this room at your earliest convenience. After the fire was out we shut the water off at tanks, put on new rings at the eleven heads which had gone off, and with water on started in full the next morning as though nothing unusual had taken place.

Yours respectfully,

THE A. H. HART & CO.,

57th street and 11th ave., N. Y.

Full particulars as to this sprinkler will be furnished upon application to the Walworth Manufacturing Co., 16 Oliver street, Boston, Mass.

The "Thermal Belt"

TRYON CITY, N. C., Sept. 18th, 1885.

Editor Manufacturers' Record:

Messrs. Ballenger & Weston are putting up a saw mill about one mile from this place in the heart of a very heavily timbered section of country. They are greatly encouraged in their enterprise as they have made arrangements to furnish large quantities of lumber to the Asheville & Spartanburg Railroad Company, who are extending their road from Hendersonville to Asheville as fast as possible and expect to be running trains by the first of the year.

They are both practical men; Mr. Weston has been connected with the saw mill business for about 25 years, and Mr. Ballenger is a merchant of the firm of Ballenger & Smith, and Mayor of our growing mountain town.

Running the mill will stimulate building in this place as quite a number of houses will be put up soon.

We have a thriving hotel called the Tryon, which has been filled to its utmost capacity for the past two months. The hotel is beautifully situated on one of the foot hills of the Blue Ridge mountains and is fast becoming a winter as well as a summer resort, as we are at an altitude that makes the summer pleasant and are well protected in the winter by the mountains on the north and west towering up for hundreds of feet, thereby making the scenery grand.

There are probably as fine peaches, plums, &c., grown here as anywhere else and they seldom ever fail. This fruit has a great deal to do with making this section popular.

Rev. Edwin Anderson is conducting a successful school with about fifty scholars. I mention this simply because it is in the line of progress, as last year we had but a small school and only a few months of the year, and at present our school board is better organized than it has ever been before.

E. J. HARRISON.

THE Chronicle, of Birmingham, Ala., has issued a large trade edition designed to set forth the growth and advantages of that thriving city. Birmingham is probably the most widely advertised town in the country. Its newspapers and its business men appreciate the old saying that "if a man bloweth not his own horn by whom shall his horn be blown?" and they are determined to keep the name of Birmingham before the world. It is this persistent advertising that is largely responsible for the rapid growth of Birmingham. The example of Birmingham might be followed with great profit by other Southern cities and towns.

The Relations of Labor and Capital.

At the Halifax meeting of the American Institute of Mining Engineers, September 15th, 1885. Mr. James C. Bayles, president, delivered an address upon the existing relations of labor and capital in the United States, from which we take following extracts:

***** However blind one may be to the spread and influence of socialistic teachings, there is little excuse for persistence in cherishing the idea that the wage-earner has no cause for dissatisfaction with the present unequal and unequitable distribution of the products of industry, or that his proper duty in life is to imitate the excellent example of the pious shepherd of Salisbury Plain, who derived supreme contentment from the fact that a kind Providence had vouchsafed him salt to eat with his potatoes. Since the French Revolution, which, with all its excesses and horrors, was the natural and legitimate outcome of causes inherent in a vicious and artificial social organization, there has been a steady, and of late a rapid, progress of the socialistic movement. More general education, a free press and organization for resistance or aggression have been the agencies by which the working classes have gained clearer ideas of their power and opportunities. The dull despair of mediæval servitude has given place to an intelligent and profound discontent with a situation which every year seems to make more hopeless; and I do not hesitate to venture the opinion that, unless strong and willing hands are extended to lift them up, they will again and again reach from the mire to pull down and destroy that which they cannot attain unaided. Blind Samson may stand chained, but, if he shall bend himself upon the pillars against which he leans in sullen silence, the whole superstructure of society will come crashing to the ground; and nothing will restrain his purpose, should the mood seize him, even though that which he destroys must inevitably fall upon him and crush him. *****

It is undoubtedly true that in no country of the world has the man with labor to sell so free a market in which to sell it as in America. The country is yet comparatively new, and there is still so much land open to settlement that mouths have not yet begun to multiply more rapidly than food. There are so many examples in which, under favoring conditions, industry and thrift have secured to the wage-earner independence, and even wealth, that those of us who have never known from personal experience what it is to overcome the difficulties which beset the mechanic in his struggle for self-improvement and social advancement, are very free with good advice for those who ask it, as well as for those who do not. But there is good reason to suppose that we know very little of the actual situation of the average workingman, and that we have no adequate conception of the strength of the cords which bind him down in the place which our industrial system has made for him. If Daniel Webster was right when he uttered the prophetic warning—"the freest Government cannot long endure when the tendency of the law is to create a rapid accumulation of property in the hands of a few, and to render the masses of the people poor and dependent"—we may with propriety consider whether even the foundations of the Republic are not menaced by the tendencies of the times.

In considering the position of the working-man we must remember that the progress of half a century has closed to him many of the doors which once stood open to industry and thrift. The high perfection of the machinery employed in all branches of production has of necessity destroyed the apprentice system, or at least so much of it as was advantageous to the apprentice. The young man upon whom devolves the necessity of self-support has not one chance

in a hundred to learn a trade. He can and does learn a part of it, but, beyond acquiring a general familiarity with one or two operations in an industrial process, he reaches man's estate with very little more knowledge of the trade he has undertaken to master than he had when he began. His chances of gaining the comprehensive knowledge which is needed to fit him for advancement to responsible positions of management and direction are so small that they may be said to be as nothing. His early education was such as boys without home advantages are likely to gain in the free schools, and of this he will retain only the elements. He can read, write and compute in the four simple rules of arithmetic; but his mind is untrained, and unless he has a strong natural bent for study there is little likelihood of his supplementing the deficiencies of his education by systematic and profitable reading. Were he disposed to do this, he could not find the books which would serve his purpose. Even elementary works presume a greater knowledge than his, and if he should make the attempt, as thousands of ambitious young mechanics have done, to improve his mind by reading the text-books of his trade, he would abandon the task as thousands have before him, because between him and the beginnings of technical literature there is a gulf which he finds impassable. He knows his daily work and it yields him a support. The future is before him—full of hope, perhaps, but offering no tangible goal for his ambition. Restless and dissatisfied he seeks change and usually finds it in marrying. He selects a wife from his own class—ignorant like himself, without purpose in life other or different from his own. His earnings will support a wife, living as the people of his class live, and he cuts off the slight remaining chance of bettering his condition by anchoring himself in the sphere to which he was born. The children which come to him are dear to his heart, but every one added to the number is only another millstone about the neck of his ambition. His home may be as happy and as comfortable as a virtuous and industrious wife can make it with the slender resources at her command, but it is cramped and crowded, and the ever-present cradle is an obstacle to self-improvement which only genius can overcome. His youthful ambition matures into the hope that he will be able to earn food and shelter for his dependents. He realizes, however, that he is but a part of the great industrial machine, and that forces are as far beyond his individual control as those which hold the planets in their orbits determine whether he shall ever attain the measure of even this reasonable hope. He works when it serves the purpose of capital that he shall work; he stands idle when capital orders production to stop. His savings in times of prosperity are consumed in times of depression, and the debts then incurred become a mortgage upon his future. His children have no brighter outlook than he had. As they grow up each in turn must help carry the burden. Of what use is to him to know that in the far West there are unmeasured acres of fertile land, and that he may have a farm for the asking? How shall he get there? How can he bridge the interval between leaving the daily work which feeds his family and reaping the harvest which that land would yield? How shall he build his house and barn and provide the implements of husbandry? Who will teach him how to break the virgin soil and plant the fruitful seed? He can no more escape from the servitude of his trade, whatever its vicissitudes, than he could from the obligations which his marriage has entailed. He is a free citizen of a free country, but the iron collar of "Gurth, Born Thrall of Cedric the Saxon," was lighter and more easily borne than are the shackles with which the exigent demands of his daily life have bound him hand and foot. His is not an isolated case. He is a type, and in con-

sidering his situation we have considered the situation of millions like him.

The wage-earner may be ignorant of science and the arts, and the sum of his exact knowledge may be only that which he has gained in his closely-circumscribed daily toil; but he is not blind, and his thoughts do not take the shape of daily and hourly thanksgiving that his situation is not worse than it is. He sees on every side the lavish display of wealth in which he has no part. He sees a large and growing class enjoying inherited abundance. He sees miles of costly residences each occupied by fewer people than are crowded into single rooms of the tenement in which he lives. He cannot fail to reason that there must be something wrong in a system which effects such unequal distribution of the wealth created by labor. In the union, which is his only defense against the oppression of individual or corporate greed, he meets the thousand others who, like himself, feel that their only hope is in destroying the existing relations of labor and capital and substituting for them a better and more equitable system of joint participation in the profits of production. He may reason wrongly, but it does not help the matter to tell him so. He may act on wrong impulses, but if repressed and defeated he will try again. The discontent and unrest of the working classes is to society as at present organized what Vesuvius was to Pompeii. When the pent forces burst their bonds asunder, who shall predict the consequences? The impulse to pull down and destroy and to create equality in suffering, because no other equality is possible, does not now exist as a purpose; but scarcely a year passes without giving evidence that it may flash into instant action, and that in the discontent of the working classes we have the potentialities of inestimable catastrophe.

As is always true in such cases, there is another duty than that involved in the repression of lawlessness created by the incendiary teachings of demagogues. The hopelessness of the position of the average wage-earner consists in his ignorance. The progress of the arts has been so rapid that few men in starting life without education are able to keep pace with them, or, indeed, to acquire familiarity with principles that they can hope to attain to responsible positions of management. While the sphere of those born to serve has been thus steadily narrowing, the sphere of those so fortunately situated that they have been able to acquire liberal education is steadily broadening. The capitalist is rarely safe in intrusting his interests in mining or manufacturing to the merely practical man. Success in business enterprises of every kind now depends upon so many things of which the merely practical man knows little or nothing, that management is usually intrusted to the man who combines education and experience, and his staff of responsible assistants is made up of young men of education who take subordinate positions to gain experience. It is in our great industries as much as it is in the army. As vacancies are created among company officers they are filled by graduates from West Point, of which the supply usually exceeds the number of vacancies to be filled. Promotions from the ranks are infrequent, and properly so, for in the ranks are found very few men in any respect fitted to discharge the duties devolving upon commissioned officers, and they would be out of place among the educated men who have been trained to command. The soldier must grow gray in honorable service, but the highest to which he can attain is the chevron of a non-commissioned officer, which entails added duties and responsibilities without bringing release from any of the restraints and limitations which the rules of the service impose upon enlisted men. It is so to a great extent in our productive industries, with the important difference that the wage-earner's term of service is never at an end. His future, in all but exceptional

instances, promises nothing better than continuance in the labor he has learned, as a competitor with machinery which may at any time displace him and force him to seek other and perhaps less congenial employment, or starve. An industrial system which considers only the volume and economy of production has cut him off from the chance of learning the trade at which he works, and the schools from which he and his children can derive no benefit are furnishing graduates whose superior fitness for organization and management close to him every avenue of advancement. To dispense with the little skill he has gained is the constant aim of his superiors, and he can never know when arms of iron that tire not, and fingers of steel that work with mechanical precision, shall come to take his place, or when the progress of science shall discover ways of rendering his knowledge of no further use. Is it to be wondered at that such a man is discontented and restless, and if it is left to him to solve the great problem of a satisfactory readjustment of the relations of the classes, he will try impracticable and dangerous methods, knowing no others. He has a grievance in the misfortune of birth under conditions which have given him little or no chance for self-improvement, and he rebels against his fate. *****

I have no plan to suggest. One may well be distrustful of everything in the shape of off-hand solutions of a problem so complex and profound as that to which I have called attention. Each of us for whom it has a direct and personal concern must study it from his own point of view. He has little reason to hope that, like *Ædipos* in the fable, he will guess this riddle of the Sphinx; but that he can do something to establish more cordial relations between labor and capital, and to create that community of interest which long ago ceased to exist between them, is more than probable. My own idea of the first step in this direction should be a more conspicuous recognition of individual worth and capacity. A plan which deals with men by classes tends to destroy the incentive individual effort to excel. Obviously, it is the interest of capital to hold out all reasonable incentives to those who have the ambition to rise above the average of their fellows, by making such self-advancement profitable. The trade union tends to the establishment of an equality on the level of a low average; it will lose its power only when men who grade above the average secure a recognition and a protection from capital which leaves them nothing to expect at the hands of those whom they have left behind, content with a lower plane of skill and efficiency. In no other way can the ambition of young men in the ranks of labor be quickened, than to open for them a way in which they can secure an alliance with those who represent the power of capital, as the reward of zealous and intelligent service. What should be the second step would depend very much upon conditions necessarily local and perhaps temporary. I do not doubt, however, that, wherever the desire exists to do something for the benefit of labor, the means will suggest themselves in conference with those in the ranks of the workingmen whose counsel may be sought with advantage. We may dismiss from our minds all the dreams of the advanced socialists, and venture no impracticable experiments. We need recognize no rights as belonging to the working classes other than those which enlightened self-interest prompts us to concede. But within this safe territory of the practicable and the expedient we can find many opportunities for broad and intelligent philanthropy, which will be fruitful of good results in readjusting the relations of the great social classes upon a safer and more stable basis. No one need consider unworthy of his most serious study a problem which in its many phases has commanded the profoundest consideration of some of the greatest minds

of the century; no one need hope for any other solution of it than will be found in well-considered and wisely-directed personal effort within the narrow spheres of individual influence. To the question "Am I my brother's keeper?" each of us who stands toward labor in the position of employer must answer "Yes." What is the nature and extent of our responsibility, each must consider for himself; but if the narrow selfishness of greed shall bid us make our heart as a mill stone and set our faces as flint against the dictates of duty and self-interest, we shall inevitably discover when too late, that the smoldering spirit of revolution is a consuming fire.

Extinguishing Fire by Automatic Appliances.

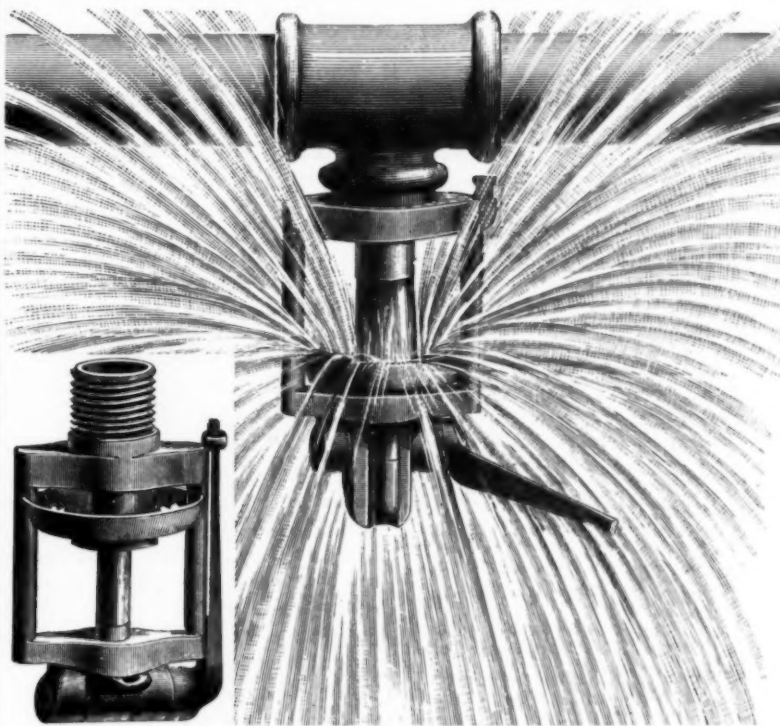
Insurance rates are so high in many places in the South, where mills are not protected by an abundant water supply, that it is, in that section especially, a matter of great importance to devise some means whereby the cost of insurance can be reduced. This has already been done by many companies that have placed automatic sprinklers in their mills, but the great majority of all manufacturing establishments in the South are still without this important protection against fire. It is obvious that to subdue a fire and prevent an extensive conflagration, the earliest time is the best time. The self-acting sprinkler is the only means known by which the needful quantity of water can be kept constantly ready to put out the small fire at any time, day or night, when called for. In fact, by means of these sprinklers the fire is made to put itself out, for the heat softens the alloy which keeps the valve closed and thus allows it to open and do its work.

The Walworth Strong Sensitive Link Sprinkler, it is stated, has many advantages over any in the market, and has overcome the constant danger of the sprinklers leaking or bursting from high pressure or water hammer, causing great inconvenience and loss, for which there is no redress. Each sprinkler is a valve or stop-cock of itself, and can be opened and closed at will. The valve holding back the water rests upon the short arm of a pivoted lever, the long arm being held to the frame by a link which can be either made of brass, soldered with fusible solder, or cast from fusible alloy. The great advantage of the link device must be plain to everyone. If a sprinkler goes off either by accident or fire it can be closed at once, a new link put on and be as good as new. Manufacturers having other sprinklers in their buildings and seeing the need of such an improvement have given this the preference. It is plain that where one can not close each sprinkler by itself the water damage must be large even after the main valve is closed, as the water above the opened sprinklers will run out. Another advantage is in placing the fusible link above the water, averting the greatest danger to which sprinklers having the solder below the water are subject. Two sets of the link sprinklers have been sold to one of the largest cotton manufacturers, who had witnessed a fire in a neighboring mill where two sprinklers having the solder at the lowest point below the water jet were only partly opened, allowing the water to seal them. The fire was finally extinguished by other means. It is by no means settled that time does not change the fusible alloy; if so, new links can be put on at little cost or trouble. If for any reason the water is to be drawn from the pipes, the sprinklers on the end of each line must necessarily be opened; in this sprinkler it is simply necessary to remove the link and open sprinklers.

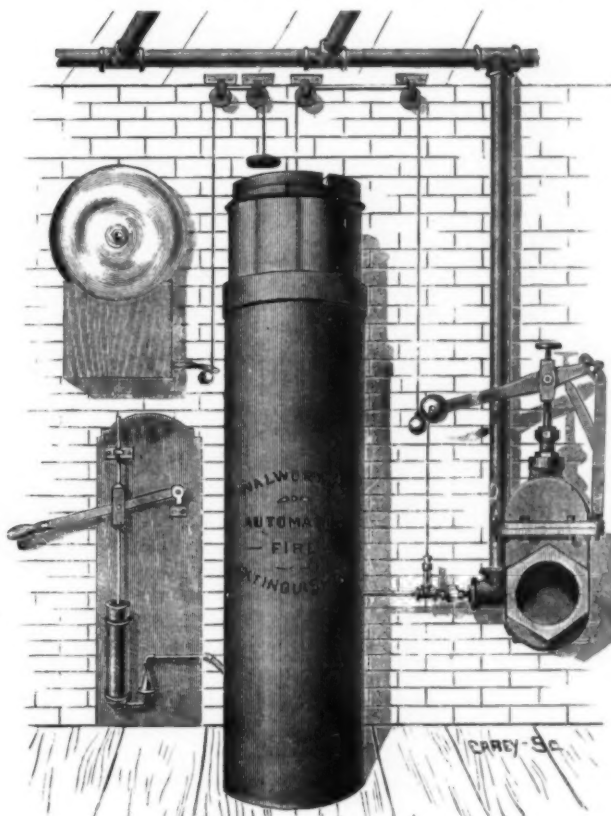
The manufacturers of this sprinkler say: "The screw valve is the strongest device known in hydraulics to resist the highest pressure. The Walworth Sprinkler uses this device. The pressure is regulated by a screw and all the parts are strong enough to resist all possible pressure to which sprink-

lers are subject, and yet so sensitive as to go off at the lowest admissible temperature. The regulating screw is covered with the short arm of the lever, thus protecting it from abuse by unskilled workmen. In case it becomes necessary to add pressure to the valve a support can be placed under the valve, resting upon the frame below, the link removed and the lever turned back, uncovering the regulating screw, which can be turned up a half thread or so, as may be needed, then with the fingers place the lever in position and put on the link, which can be done

both pipe and fittings; such as a combination of wires, which would invariably break; such as a heavy pressure of air which no ordinary system of piping could stand without leaking. The object of this prelude is to call attention to the Walworth patent dry pipe system. By this system the pipes are filled with compressed air under a pressure of one pound to the square inch. Attached to the pipes is an airometer, the inner tank having a weight upon it of 100 pounds. This tank and weight is raised by the compressed air, and as soon as a sprinkler is opened the



THE WALWORTH STRONG AND SENSITIVE SPRINKLER.



THE WALWORTH DRY PIPE SYSTEM.

and made tight under a pressure of 500 lbs. The Walworth Sprinkler is accepted and approved by all Factory Mutual Fire Insurance Companies of the East and West.

Immediately following the adoption of automatic sprinklers to replace the old system, the question arose, "how can the pipes and sprinklers be kept thoroughly free from danger of freezing?" In cold places water in the pipes would be simply impossible, and shutting the water off by a common valve would cease to make the system automatic. Many devices were suggested, such as chemicals, which would soon corrode and destroy

pressure being released allows the tank and weight to fall, thus opening a valve and either starting the pump or releasing the water from the tank or street mains. It is so arranged that an alarm will sound just before the valve is to be opened, notifying that there is a fire or that more air must be pumped. The entire supply of air can be produced by a few strokes of the air pump."

As an illustration of the effective work of these sprinklers, we append the following letter:

MESSRS. WALWORTH MFG. CO.:

Gentlemen—On Sunday evening, fire was

discovered in our engine room, and in five minutes had worked its way through a belt box to the fourth floor. For a few minutes it looked as if the place must go, but the automatic heads on each floor near the fire went off and quickly extinguished it without assistance from hose or anything else. Had there been sprinklers in the engine room, fire could not have got beyond it, and we will be pleased to have you put them in this room at your earliest convenience. After the fire was out we shut the water off at tanks, put on new rings at the eleven heads which had gone off, and with water on started in full the next morning as though nothing unusual had taken place.

Yours respectfully,

THE A. H. HART & CO.,

57th street and 11th ave., N. Y.

Full particulars as to this sprinkler will be furnished upon application to the Walworth Manufacturing Co., 16 Oliver street, Boston, Mass.

The "Thermal Belt"

TRYON CITY, N. C., Sept. 18th, 1885.

Editor *Manufacturers' Record*:

Messrs. Ballenger & Weston are putting up a saw mill about one mile from this place in the heart of a very heavily timbered section of country. They are greatly encouraged in their enterprise as they have made arrangements to furnish large quantities of lumber to the Asheville & Spartanburg Railroad Company, who are extending their road from Hendersonville to Asheville as fast as possible and expect to be running trains by the first of the year.

They are both practical men; Mr. Weston has been connected with the saw mill business for about 25 years, and Mr. Ballenger is a merchant of the firm of Ballenger & Smith, and Mayor of our growing mountain town.

Running the mill will stimulate building in this place as quite a number of houses will be put up soon.

We have a thriving hotel called the Tryon, which has been filled to its utmost capacity for the past two months. The hotel is beautifully situated on one of the foot hills of the Blue Ridge mountains and is fast becoming a winter as well as a summer resort, as we are at an altitude that makes the summer pleasant and are well protected in the winter by the mountains on the north and west towering up for hundreds of feet, thereby making the scenery grand.

There are probably as fine peaches, plums, &c., grown here as anywhere else and they seldom ever fail. This fruit has a great deal to do with making this section popular.

Rev. Edwin Anderson is conducting a successful school with about fifty scholars. I mention this simply because it is in the line of progress, as last year we had but a small school and only a few months of the year, and at present our school board is better organized than it has ever been before.

E. J. HARRISON.

THE Chronicle, of Birmingham, Ala., has issued a large trade edition designed to set forth the growth and advantages of that thriving city. Birmingham is probably the most widely advertised town in the country. Its newspapers and its business men appreciate the old saying that "if a man bloweth not his own horn by whom shall his horn be blown?" and they are determined to keep the name of Birmingham before the world. It is this persistent advertising that is largely responsible for the rapid growth of Birmingham. The example of Birmingham might be followed with great profit by other Southern cities and towns.

CONSTRUCTION DEPARTMENT.

WE PUBLISH, every week, a list of every new factory, of whatever kind, projected anywhere in the South; every railroad undertaken, and every mining company organized. This information is always fresh, and, by enabling manufacturers to correspond with the projectors of such enterprises, before their supplies of machinery have been purchased, is of great value. Manufacturers will find it to their interest to read this department carefully each week.

Industrial Progress of Two Weeks.

Not only do the signs of coming industrial activity in the South multiply, but the activity itself is already seen. Factories that have been idle for some months are resuming work; the demand for manufactured goods is improving, and the Southern people are in good spirits regarding the future. Three or four large cotton mills in the South will start up at once, after an idleness of several months, while a number of other cotton mills are repairing their machinery and putting in new, one company having just voted \$20,000 for new machinery. During the last two weeks the MANUFACTURERS' RECORD has reported some very important enterprises that will materially add to the wealth of the South. The most important new enterprise reported in the South for a long time is that, of which particulars are given to-day, for the erection of immense works in Virginia at a cost of \$2,250,000 to manufacture steel, composite brass, &c., the annual capacity to be 100,000 tons. The purchase of 18,000 acres of magnificent coal and iron land has already been made, and the preliminary work of getting ready to construct the plant will, we are assured, be commenced this fall. Everything necessary for the construction of these immense works, we have been personally informed, has been secured. Besides this, there have been a number of other extensive enterprises reported during the last two weeks, and among them we note a \$250,000 coal mining company in Alabama; a \$450,000 mining company in Kentucky; a \$50,000 coal mining company in the same State; a \$50,000 coal mining company in West Virginia; the lease of 7,000 acres of coal land also in that State for development, and several gold mining enterprises in North Carolina and Georgia; a \$50,000 axe and hatchet factory will be erected in Louisville, Ky.; a large fertilizer factory in Columbia, S. C.; an ice factory in Corsicana, Texas; in Richmond, Va., a new carriage factory is nearly completed, while large additions are to be made to a fertilizer factory; in Dallas, Texas, \$150,000 electric light works have been contracted for, and in Knoxville, Tenn., and Waco, Texas, electric light companies have been organized; a \$100,000 milling company has been chartered in Denton, Texas; a \$100,000 caisson manufacturing company in Baltimore, and a barrel manufacturing company in Columbus, Ga.; in Lynchburg, Va., a large tobacco factory has been contracted for; in Henderson, Texas, a foundry will be built; in Sherman, Texas, an oil refinery and a soap factory have been added to a cotton seed oil mill; in McNinch, Tenn., \$15,000 have been spent for new machinery for a fertilizer factory; Houston, Texas, is working up a cotton mill and a soap factory company; a pottery is being built near Walhalla, S. C.; a machine shop is under construction in Tavares, Fla.; a wood pulp paper mill in Manchester, Tenn.; a machine shop in Charlotte, N. C.; a paint and barrel factory in Talladega, Ala.; in Thomaston and Conyers, Ga., cotton seed oil mills are projected; at Annapolis, Md., a glass factory is being built; Montague,

Texas, is to have a \$30,000 flour mill; Palatka, Fla., new railroad machine shops, and Claremont, Va., a foundry and a canning factory. Of other enterprises, such as saw mills, planing mills, grist mills, gineries, &c., the number is very large, while the manufacturing enterprises that are enlarging and putting in new machinery are almost too numerous to mention.

ALABAMA.

Saffold Berney, Anniston, Ala., has established a ginnyery.

The Birmingham, Ala., Cotton Mills have been sold to B. F. Roden for \$25,710. They will probably be put in order and started up.

Messrs. Ensley, Morris and Gould, of Birmingham, Ala., are perfecting arrangements to open a coal mine in Franklin county.

Mobile is to have a new shirt factory.

T. L. Eastburn, Mobile, Ala., will establish a cigar box factory.

The Penn-Mobile Coal Co., capital stock \$250,000, has been organized in Mobile, Ala., by Jos. W. Burke, Adam Glass, G. B. Clark and Le Vert Clark, to mine coal.

Oliver Weiser, previously reported as intending to establish a chain factory in the South, is now in Birmingham, Ala., looking for a location.

A. H. Sims and P. F. Smith have leased the Lide Paint Mines, Talladega, Ala., and will put in grinding machinery, steam power, &c. Will also establish a barrel factory.

ARKANSAS.

The Pocahontas & Hoxie Railroad Co. has been organized at Pocahontas, Ark., capital stock \$66,000, to build a 14-mile railroad.

Mr. Ginocchio, of Fort Worth, Texas, will build a \$50,000-hotel at Texarkana, Ark. The contract, it is reported, has been let.

Julian C. Bogy & Son have nearly finished their cotton gin and grist mill at Altheimer, Ark.

FLORIDA.

G. Gordy, Glendale, Fla., has ordered machinery for a saw mill.

W. P. Floyd, Tavares, Fla., is pushing work on the machine shop previously reported as to be erected there.

A. W. Hardee and J. S. Hiestand, Lakeland, Fla., have leased ground in Sanford, Fla., to which they will remove their saw and planing mill.

Wm. Bothamley has purchased a saw mill at McKinnon, Fla., which he will move to some other point.

GEORGIA.

Davis & Carothers have completed their grist mill at West Point, Ga.

The Central Club, Conyers, Ga., are discussing the feasibility of establishing a cotton-seed oil mill.

Jeter & Littlefield, Brunswick, Ga., have purchased a site on which to erect a warehouse to cost not less than \$10,000.

The stockholders of the Troup Cotton Factory, La Grange, Ga., have decided to replace their old machinery with new, and remodel their building at a cost of about \$20,000. J. L. Robinson is president of the company.

The Coweta Fertilizer Co., Newnan, Ga., previously reported, will receive bids for erecting a building for their fertilizer factory.

Bills have been introduced in the Georgia legislature to incorporate the Athens, Danielsville & Eastern Railroad Co. and the Classic City Street Railroad, of Athens.

It is reported that a cotton-seed oil manufactory will be started at Thomaston, Ga.

There is some talk of a \$100,000 paper mill company being organized in Waycross, Georgia.

J. F. Edwards & Sydney Hearn are erecting a gin at Owensbyville, Ga.

J. J. A. Sharp & W. McCandless have sold their gold mine near Canton, Ga., to S. C. Tate of Tate, Ga., and others, who will open up and develop it.

The Rome Western Railroad Company has been chartered in Georgia.

KENTUCKY.

W. C. Kelly & Co., Louisville, Ky., previously reported as intending to rebuild their axe and hatchet factory, will erect works to cost about \$50,000.

York & Porter have leased coal land at Utica, Ky., which they will develop.

The Kentucky Coal Mining Co., capital stock \$50,000, has been incorporated in Covington, Ky., by Lenard Frank, Edward Hunt, Simon Silvernaile, John C. F. Kinsey and John W. Gilbert to mine coal.

LOUISIANA.

Wilbert & Sons, Plaquemine, La., contemplate enlarging their shingle factory.

The Carpenter-Ely Manufacturing Company, S. D. Carpenter, president; Plaquemine, La., reported last spring as organized, have contracted for machinery to make 200,000 shingles a day.

MARYLAND.

O. H. Dennis, A. G. Wolfgram, Jos. A. McLaughlin, Thomas Broscup and Henry B. Sapp have incorporated in Baltimore, the National Patent Caisson Company, capital stock \$100,000, to manufacture and sell caissons.

NORTH CAROLINA.

The Shuttle Block Factory, Raleigh, N. C., will put in \$1,500 worth of new machinery.

Ballenger & Weston, Tryon City, N. C., are erecting a saw mill.

L. S. Holt has purchased the La Fayette Cotton Mill at Company Shops, N. C.

F. W. Ahrens, Charlotte, N. C., will move his machine shops into a new building now being erected.

A shingle factory will be started at Winton, N. C., by a Pennsylvania firm.

A \$100,000-hotel, it is stated, will be erected at Wilmington, N. C., by Wm. Bryan of Connecticut.

A \$15,000-company has been formed, at Whitakers, N. C., to build a tobacco warehouse.

Simon Whitehurst & Son, Aurora, N. C., are enlarging their saw and grist mill.

Sam. Ashbury, Charlotte, N. C., has leased a building which he will fit up as a machine shop.

W. H. Ragan, High Point, N. C., has purchased the Mt. Vernon Mills, near that place, for \$4,000.

C. B. Wright, of Wilmington, N. C., has purchased the Cape Fear Flour Mills for \$15,050, and will improve them and put in new machinery.

SOUTH CAROLINA.

A stock company has been formed in Columbia, S. C., to manufacture fertilizers and acid. Four acres of land have been purchased on which buildings will be erected.

J. C. Neville, Walhalla, S. C., is erecting a two story building, in which he will establish a pottery.

TENNESSEE.

The Tennessee Construction & Contracting Co. has been incorporated at Nashville, Tenn., by Wm. G. Ford, Wm. B. Sterrett, Wm. G. Ford, Jr., Reese B. Edmundson and Edward Jordan.

Lebanon, Tenn., people are discussing the establishment of a cedar ware factory.

Thomas Jones & Sons will move their saw mill to Hillsboro, Tenn.

A shirt factory will be established in Chattanooga, Tenn., by O. H. Pennock, of that place, and Mr. Escherman, of Philadelphia.

T. H. Cheek, of Marietta, Ga., is reported as having decided to erect a \$300,000 flour mill at some point in Tennessee.

The Stone Fort Paper Co., Manchester, Tenn., are making good progress in the erection of their wood pulp mill.

TEXAS.

Neace & Hill Bros., Double Springs, Texas, are building a mill.

The Gulf, Colorado & Santa Fe Railroad Company, Galveston, Texas, are reported as intending to build a grain elevator, wharves etc., at a cost of \$500,000, as soon as the necessary permission can be secured from the city.

Still & Brenagar, Overton, Texas, will move their foundry to Henderson, Texas.

The Alliance Milling Company, capital stock \$100,000, has been chartered at Denton, Texas.

The contract for building a court house at Kerrville, Texas, previously reported, has been awarded to D. C. Anderson, of San Antonio, at \$19,545.

The Edison Electric Light Co., Dallas, Texas, previously reported, have signed contract agreeing to erect a \$150,000 plant in that city.

It is reported that a company will be formed to erect a cotton factory at Houston, Texas. The erection of a soap factory, to use cotton-seed oil principally, is also contemplated.

Waco, Texas, has contracted with the Jenny Electric Light Co. for the erection of electric light works.

The ice factory, previously reported as to be built in Corsicana, Texas, will be put up at once by Thompson & Honey, who have commenced work on it.

Martin, Byrenes & Johnson have been awarded the contract for building a court house at Pecos, Texas, for \$39,500.

The Sherman Oil Works, Sherman, Texas, are being enlarged and new refining machinery put in. This company have also added a soap factory to their works.

VIRGINIA.

The Atlantic & Virginia Fertilizing Co., Richmond, Va., will build an addition to their factory and put in new machinery.

James McDonough & Co., Richmond, Va., have nearly completed their new carriage factory.

The Virginia Nail & Iron Works, Lynchburg, Va., contemplate doubling the capacity of their works.

The Virginia Hedge Company has been organized in Roanoke, Va., with S. F. Simmons, president; S. H. Trout, secretary; and R. L. Garner, general manager, to put up patent hedge fence. Capital stock \$50,000.

Gillespie Bros., Millboro, Va., are building a saw, grist and planing mill.

The Atlantic Iron Works, Norfolk, Va., have been purchased by A. A. McCullough for \$25,000. It is reported that operations will be resumed in these works.

LOCKWOOD, GREENE & CO.

MILL ENGINEERS

Office, 65 Westminster St., Providence, R. I.

Carefully prepared plans, specifications and estimates furnished for the construction, equipment and organization of new mills and the revision and improvement of old.

Thomas Breen, of the Breen Steel, Coke & Composite Brass Manufacturing Co., of Knowlton, Pa., has purchased for his company 18,000 acres of mineral land in Southwest Virginia, where it is proposed to build two large furnaces, having an aggregate capacity of 100,000 tons a year, and to cost about \$2,250,000; steel rails, car wheels, composite brass, &c., are to be manufactured.

Chemical works are talked of in Newport News, Va.

WEST VIRGINIA.

A large lumber manufacturing company has commenced operations in Davis, W. Va., and a factory will be erected by Indiana parties at the same place.

Negotiations are pending for the erection of a large nail mill in Charleston, W. Va.

Ebenezer Williams, Minersville, Ohio, has leased 7,000 acres of coal land on Big Guano Creek, near Winfield, W. Va., which he will develop.

The West Virginia Central & Pittsburg Railroad Co., Henry G. Davis, president, have built an engine house and machine shops at Davis, W. Va., and propose to erect a large hotel two miles from Davis.

BURNED.

Saw and planing mill of A. T. Anderson, near Kildare, Texas. Loss \$25,000 to \$35,000.

Powell's whiskey distillery and warehouse near Morganton, N. C.

The Tropp's Mills, Kirkseys, S. C., owned by Miss McCurry, badly damaged by boiler explosion.

Distillery of J. W. Shore, in Yadkin county, N. C.

Gin house of Fleming & Chapel, near Brushy, Ga.

Farmer's Rice Mill, Pointe-a-la-Hache, La.

Planing mill of H. W. Bradshaw, Suffolk, Va.; loss \$10,000.

Reutlinger & Eisfelder's brewery, Henderson, Ky., was damaged Sept. 16 about \$6,000 by boiler explosion.

The saw mill of Nathaniel McGill, near Martinsburg, W. Va., has been damaged by boiler explosion.

Ginnery of John L. & Gabe Till, Waterloo, Ala. Loss is \$1,000.

The planing mill of Allen Brothers, Texarkana, Ark. Loss \$5,000.

Merrill, Earle & Ford's pipe factory, Pamplin City, Va. Loss about \$17,000.

Works of the Southern Pump Company, Nashville, Tenn. Loss, including lumber, &c., reported at \$200,000. Have not decided whether to rebuild or not.

Mill of Wm. Hadley, and machine shops, saw mill and cotton gin of F. M. Hadley at Hadley's Mills, N. C.; loss is about \$10,000.

A \$50,000 Factory.

LOUISVILLE, KY., September 15, 1885.
Editor Manufacturers' Record:

I will soon commence the erection of a new axe and hatchet factory at this place, to cost about \$50,000. I will use steam power. Forge shops will be frame and corrugated iron. Balance of works will be brick and corrugated iron roof.

W. C. KELLY.

Railroad Machine Shops.

JACKSONVILLE, FLA., Sept. 14, 1885.
Editor Manufacturers' Record:

We will erect repair shops in Palatka. We have arranged for the grounds; have purchased machinery, and in the course of a few weeks will begin the erection of shops. It is not designed at present to do any new work; but our shops will be large enough to do repairing for 250 miles of road.

M. K. MORAN.

Supt. Jacksonville, Tampa & Key West R. R.

\$15,000 for Machinery.

MEMPHIS, TENN., September 14, 1885.

Editor Manufacturers' Record:

We have recently bought a new plant—added to our machinery and doubled our capacity for grinding bone and making fertilizer—at a total of \$15,000, cash cost.

MEMPHIS FERTILIZER CO.

A. B. WARD, Secretary.

A New Barrel Factory.

COLUMBUS, GA., September 14, 1885.

Editor Manufacturers' Record:

We have organized a stock company to manufacture oil and other barrels, with the following officers: C. A. Hough, president; E. H. Jenkins, secretary and treasurer; J. W. Burton, manager. Have let contract for building and machinery, and expect to be in operation in a month from date. Will make oil barrels exclusively to start with, as we have already contracts enough to keep us busy in that line; but intend to extend our business to other branches of wooden ware, etc., in the near future.

E. H. JENKINS, Secretary and Treasurer,
COLUMBUS BARREL MAN'FG CO.

New Factories at Mount Airy.

MOUNT AIRY, N. C., Sept. 17, 1885.

Editor Manufacturers' Record:

It is reported that there will be one saw mill and three tobacco factories erected here soon. G. M. Booker has already opened a smoking tobacco factory, and two others are spoken of, besides three plug factories. Crops are fine, and everything bespeaks prosperity. Success to the RECORD.

J. P. RAWLEY.

Grist Mill and Gin.

DENMARK, TENN., Sept. 19, 1885.

Editor Manufacturers' Record:

We have finished putting up steam gin and grist mill; 9x12 centre crank engine; capacity of mill 25 to 30 bushels of corn per hour; capacity of gin 10 bales per day.

CAMPBELL & ROSSER.

Building a Mill.

DOUBLE SPRINGS, TEXAS, Sept. 19, 1885.

Editor Manufacturers' Record:

A mill is being erected here by Neace & Hill Bros. The mill is a 42-inch burr, with a 30 horse-power engine. C. C. NEACE.

A \$30,000 Tobacco Factory.

LYNCHBURG, VA., Sept. 19, 1885.

Editor Manufacturers' Record:

The factory being erected for us is corner 7th and Lynchburg streets, and is 150 feet deep by 45 feet wide, and five stories high, with all modern factory machinery. Lot and building cost \$20,000. Outfit, in the way of boiler, engine and other machinery, &c., for work, cost about \$10,000. Will work about two hundred hands.

TIMBERLAKE, JACKSON & CO.

RALEIGH, N. C., Sept. 21, 1885.

Editor Manufacturers' Record:

"The North Carolina Wire and Picket Fence Company" was incorporated September 5th, 1885, to manufacture and sell the American Fence Machine; and to manufacture and sell the American Wire and Picket Fence. Principle office in Raleigh.

CHAS. D. UPCHURCH.

POPLARVILLE, MISS., Sept 15, 1885.

Editor Manufacturers' Record:

I will move my saw and planing mill to Pietona, Miss., and will be ready to work about the first of November next. My mill cost about \$4,000, and will cut about 15,000 feet per day of the best yellow pine, dressed or rough.

J. P. DAVIS.

Activity in Mitchell Co., N. C.

BAKERSVILLE, N. C., Sept. 12, 1885.

Editor Manufacturers' Record:

Since writing you in June last, business has taken a new start. The summer resort hotels have been filled, and many who applied for room could not be accommodated. The Roane Mountain Hotel is already enlarging its building.

We have three new saw mills with a capacity of 24,000 feet of lumber per day. Most of the lumber sawed is cherry, which commands \$50 per M, thus adding a large cash business to the country. The celebrated Cranberry Iron Mines are now advertising for 150 more choppers and 8 teams, thus nearly, if not quite, doubling their business at the mines.

The Clarissa Mica Mine, which has not been worked the past year, is now to be reopened. This is the celebrated mine that showed the workings of the pre-historic race, and has produced more mica than any other mine in the world. A new paper—"Church Messenger"—has made its appearance in this county, and the "Black Mountain Pioneer," on the border, in Yancey county. There are now openings for papers at the promising villages of "Elk Park" and Cranberry. This town is still the banner town for healthfulness—no death in one year, and we have about 700 inhabitants, and over 20 children born during the year. The crops are truly magnificent. S. WORTHEN.

Whittier.

The Citizen, of Asheville, N. C., in speaking of the new town of Whittier, about which we have already given some particulars, says: Swain county, in which the town of Whittier is to grow and flourish, until the advent of the railroad, retained its virgin freshness with less obtrusion upon its seclusion than any county in the West. It lay aside from the great line of travel. The other counties were traversed and connected by the great State turnpike. Swain had none of this, though penetrated and crossed by common highways. But it was rarely visited and was little known. It lay along the route projected for the railroad to Murphy; a route made necessary to get around the great Nantahala chain. The route is now practically complete; and let us see what this has disclosed.

In the first place, the country is traversed by the large rivers, the Tuckaseegee and the Tennessee, which unite ten miles below Charleston, the county seat; also by Oconaluftee, by many thought the most beautiful stream in all the mountain region; and by the Nantahala, its bold and brilliant rival, which never halts a moment in its headlong course from its rise 4,000 feet above the level of the sea until it finds a rest in the broad bosom of the Tennessee. And then there are numerous other large rapid creeks, for which art and industry will find a use. The county is bordered on the north by the Smoky mountains, here rising to their highest elevation, Clingman's dome being 6,660 feet in height. The Balsam mountains bound it on the east, a little less in height than the Smoky. The Cowee mountains run through the center, and there are numerous smaller chains which give a mountain character to the whole county. But on all the streams, except the Nantahala, there are valleys more or less broad, all of great fertility. And there is no barren land in the county. To the very highest peak the soil is deep and rich; and along these slopes and down to the valleys the variety and size of the trees is amazing. Hemlock trees six feet in diameter, poplar and walnut even larger; cherry three and four feet through; buckeye, sugar maple, chestnut, beech, birch, all exceeding the dimensions found elsewhere, constitute the forest, which, except in the valleys, until of late, have remained unbroken.

Within the last few years, tobacco has been found peculiarly adapted to the soil

and climate, and Swain county bright leaf has already established its reputation, a matter of little wonder when from 75 cents to \$1.25 a pound are not uncommon prices obtained. The other products of the county are all the grains grown on uplands, with potatoes of remarkable excellence; all the vegetables are absolute perfection, and apples, cherries, peaches, pears, grapes and other fruits, equal to any in the country. And it may be added that the mountain sides, especially those along the slopes of the Smoky, produce all the grasses in perennial luxuriance.

Add to this a climate salubrious and healthy, water cold and pure, and scenery grand and beautiful, and conception may be had of the appropriateness of the choice for the site of the town of Whittier. He is a bold man who undertakes to found a town. He may well be a proud man whose success will approve his boldness. We think Mr. Whittier is a bold man; we are very sure he will have the reason to be a proud one.

COMMENTING on the enormous water power of Columbus, Ga., the Enquirer-Sun of that city, says:

"The current of the river from here to the gulf scarcely exceeds four miles an hour, while above it is from ten to thirty miles an hour. Within two and a half miles of Columbus the fall in the Chattahoochee river is 125 feet. The volume of water at the lowest stage equals 300 horse-power to the foot-fall, or a total of 37,500 horse-power for the two and a half miles. During nine months of the year the average volume of water is double that at the lowest stage, and would give 75,000 horse-power. To one unacquainted with the facts, these figures will appear marvelous, but to those who will visit the river and view the grand sight of its rushing waters, and hear their incessant roar, at almost any locality from the city of Columbus to the Columbus factory, will fully believe they are below what they should be. But this is not all. To the 125 feet fall to the Columbus factory we must add an additional fall between there and West Point of 237 feet, or a total of 362 feet, or 100,000 horse-power for the lowest water, and nearly double that for average stage. Only a small portion of this wonderful water power is now used. In this city the Eagle and Phenix, Muscogee and Columbus mills are driven by it, and aggregate about 60,000 spindles and 2,000 looms. To drive this machinery requires about 3,000 horse-power, or something like one-tenth that available. The total capacity of the local water power at Columbus is sufficient to drive over 800,000 spindles and their accompanying machinery. It is too early in the century to multiply these figures by three in order to take in the entire fall for 33 miles. This power, with other material advantages, renders Columbus an inviting field for the investment of capital in cotton and other manufacturing."

HOWARD & BULLOUGH & RILEY have just taken orders for 4 roving and 2 intermediate frames of their improved style; also 15 deliveries of drawing, to be placed in one of the leading mills in Taunton, Mass. Both drawing and intermediate frames are to have their patent electric stop motion for preventing "single" or waste.

CORRESPONDENCE relating to the manufacturing, mining, lumbering and all other material interests of the Southern States is solicited. Reaching so many capitalists in all parts of the United States seeking profitable investment in the South, the MANUFACTURERS' RECORD offers an excellent chance for the people in that section to place the advantages of each locality before those likely to be interested. We will take great pleasure at all times in telling what has already been accomplished in the South, and showing up the opportunities of doing still more.

MINING NOTES.

By T. K. BRUNER, Salisbury, N. C.

THE BIG RUSSELL MINE.

Work is progressing steadily at the Big Russell Mine, in Montgomery county.

They have had surveys made with the view of running a tram road from the mouth of the tunnel to the Uwharrie river, and these papers, together with the estimates are now in London, England, where the company resides, awaiting their approval. Should the plans be approved, the superintendent will proceed to erect the largest stamp mill in the South. They now have twenty stamps at the old mill site (which cannot be used for want of water) which will be added to the forty contemplated at the new mill on the banks of the river, making a battery sixty strong.

CONRAD HILL MINE.

Mr. McKee, superintendent of the Conrad Hill Mine, in Davidson county, has received orders to fork the water from the mine at once, with a view, it is understood, of starting the work again. This is regarded as a reliable property.

BALTIMORE GOLD AND SILVER MINING AND SMELTING COMPANY.

It is also reported that this company have instructed their superintendent, Mr. Wm. K. Dickens, to clear the mine, preparatory to a resumption of active operations. This is a stocked corporation, and they have 300,000 shares at \$5 each.

The mine was known, prior to the purchase of this company, as the 'Emmons Mine.' It is one of the discoveries of that eminent man of science, who at one time was the State Geologist of North Carolina. The main shaft still bears his name, and has reached a depth of 416 feet. The property was visited by the writer just before it closed down in the fall of 1884. This main shaft is sunk on the incline of the lode, at an angle nearly equal to 45 degrees. From this shaft the mine is developed by four levels; a brief statement will explain: first level is 200 feet from the surface and has been worked in lateral extent, 680 feet, and is practically worked out; second level is 280 feet from the surface, is 550 feet long; third level is 350 feet from the surface and 400 feet in length; fourth level is 410 feet from the surface and has been worked a distance of 90 feet on the north winze.

The ore is chalcopryite, with the associated forms of copper, common to the cupriferous views of the huronian formations of this State, and is hoisted from the mine by means of cars run on a tram road built on the bed of the incline.

They have two seventy-five horse power boilers which generate ample steam for all purposes; two Howland pans for saving gold from the burnt sands after the copper has been extracted, and a good pumping plant. Heretofore they have been cobbing the ores and shipping to Baltimore, but the reason assigned for stopping last year was to erect a water jacket furnace and a plant for reducing the ores and extracting the metals on the property. It is presumed that this reported new start is in furtherance of that idea; for the ores are not of sufficient high grade to justify shipping.

NORTH STATE ORES.

Mr. B. S. Loney, superintendent of the North State Mine, was in Salisbury this week making arrangements to ship the sulphide ores of that mine to Mr. John Jacobs, of the Yadkin Gold Mining & Milling Co., to be worked by chlorination.

STEELE MINE.

It is reported that the Steele Mine, in Montgomery county, is to be reopened this fall. It has produced largely in the past, and doubtless can be made profitable again.

FORTY-SIX AND A HALF POUNDS OF GOLD.

The output from Hoover Hill Mine, in Randolph county, was forty-six and a half pounds of gold for the month of August. This is equal to about \$11,160. Hoover Hill is leading just now as a producer, and has kept a fairly even record for several years. One thing should not be forgotten, and that is that it is a successful paying mine and that it is a credit to the State. The present indications all point to a continuance of the yield.

RUDISIL MINE.

This is one of the standard sulphide mines of Mecklenburg county. Mr. T. C. Dunn, Superintendent, has just returned from Boston, where he has been in the interest of the property. He has not yet reported the success of his journey. The ore of the Rudisil is uniform and of good grade, and is reliable under careful management.

SALE OF THE ROCKY RIVER MINE.

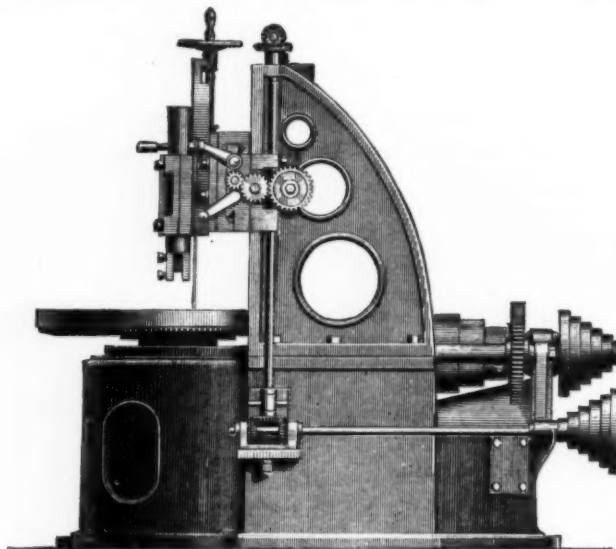
This property was not sold under judg-

37-inch Boring and Turning Mill.

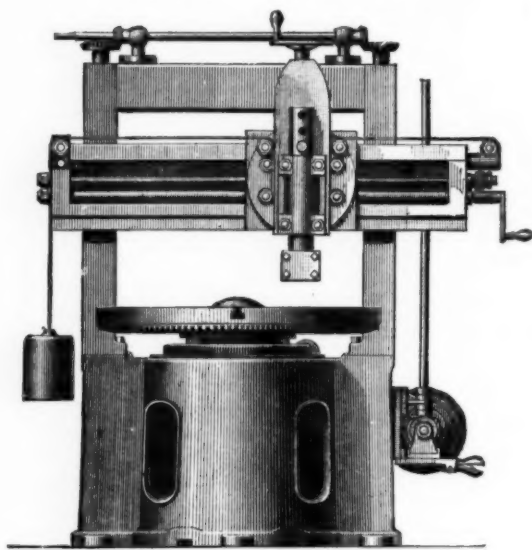
This machine was designed to meet the wants of shops where a large swing lathe was wanted but room cannot be afforded to it.

As the larger sizes of vertical boring mills are so well understood and appreciated, so will this machine fill a want, as it can be used for turning, boring, facing gears, pulleys, cylinder heads, flanges and a great variety of work now performed on a lathe; it being, however, more convenient to lay the work on the revolving table than to fasten it to a face plate of a lathe. All sliding parts are scraped to a fit and nuts case-hardened. Care has been taken to make the machine as perfect as any manufactured.

The full swing of the machine is 37 inches, and the diameter of the table is 36 inches. The extreme distance between table and cross rail is 21 inches. It bores and turns



37-INCH BORING AND TURNING MILL.



37-INCH BORING AND TURNING MILL.

ment, as stated last week, but by a commissioner under a consent decree; and not only for the benefit of Holmes *et al.*, but also for the benefit of J. J. Newman, who owned one of the several tracts sold. Newman consented to and united in the consent decree for the sale of all the property, as Judge Hughes, to whom he sold it several years ago, failed to comply with the terms of the sale. Holmes *et al.* will be satisfied by the commissioners' sale, reported last week, while Newman, to secure himself for the balance of over \$40,000 yet due him by Hughes, has the property as recourse only, which, according to the decree, will be "divided without prejudice," when the sale is confirmed by the Cabarrus court. This explanation is due Mr. Newman and sets the real facts before your readers.

If you are not already a subscriber to the BALTIMORE MANUFACTURERS' RECORD, send us \$3 and you will receive it regularly for one year, or six months for \$1.50.

at any angle. It has ten speeds—from 2 to 50 revolutions per minute. The proportion of gearing is 36 to 1. It has six feeds, $\frac{3}{8}$ inch to 1-32 inch. The weight is about 6,000 lbs.

This machine is only one more added to Mr. Bullard's series, made at his own shop. He also handles at his ware-rooms in New York, a full line of other machines for which he is agent. Catalogues will be furnished upon application to E. P. Bullard, 14 Dey Street, New York City.

THE facts regarding the purchase of 18,000 acres of mineral land, and the proposed erection of immense steel works in Virginia by the Breen Steel and Composite Brass Manufacturing Company, were furnished to us by Mr. Breen himself, while in this office last Tuesday.

Decline of England's Cotton Trade.

One of the principal industries of England—cotton manufacturing—is now passing through an acute crisis, and is almost threatened with paralysis. Owing to over-production and consequent lowering of prices, many of the mills have shut down altogether. Others are being run on short time. At Oldham, the principal cotton manufacturing centre of Great Britain, the mill owners stopped work eight weeks ago on the failure of their employees, numbering over 25,000, to accept a 10 per cent. reduction in wages. At Bolton, 4,000 operatives are out. Throughout the cotton country there are probably 40,000 on strike, and quite as many more working short time. The condition of these poor people is pitiable. Only 4,000 of the strikers at Oldham belong to the trades union, the 19,000 others are dependent on the charity of the merchants of the town for bread. Out-door relief has been granted to such an extent that the guardians of the local union have had to add \$10,000 to the annual estimate for that item.

The owners are, comparatively speaking, as badly off as the employees. According to a recent statement, forty-eight spinning companies of Oldham lost in the two months before "shutting down" \$176,870. This does not include the loss of interest on the capital invested or the wear and tear of the machinery. Other districts have suffered equally. The weaving companies suffer even more than the spinning concerns. "The remarkably poor state of the cloth market," says the Cotton Factory Times, "is at present the most depressing feature of the trade. The stoppage of looms is on the increase, and this is not to be wondered at, as manufacturers are weekly becoming in a worse position." This is a gloomy outlook.

The cause of the depression is not that England is manufacturing more goods, but that her available market is diminishing. Only to Egypt and China—to the latter country on account of the trouble with France—did English manufacturers sell more cotton during the first seven months of 1885 than during the seven months of 1884. The exports to every European country except Turkey, and to India and Ceylon, have fallen off considerably. The United States does not take nearly as much as she used to do. Our own factories are supplying us with fabrics nearly as good, and much cheaper than the English. But the market which has been the duldest is Great Britain itself. Owing to trade depression the people cannot afford to buy. There does not seem to be a prospect of improvement. The agricultural returns indicate that the English crop this year will be short. The agricultural laborers will in a few months be out of employment as a consequence. Strikes are the order of the day in the manufacturing towns. In the meantime the British colonies are erecting their own factories. In the United States our manufacturing facilities are being extended. England's foreign market will become more restricted, while the machinery of her mills is being eaten by idleness and rust.

Yet this is the very time chosen by a certain class of political economists to urge the crippling of our factories and the annihilation of one of our most flourishing industries by tinkering with our tariff laws. The people of America should advise these gentry, "Hands off."—Chicago Inter-Ocean.

NEGOTIATIONS are pending, so we have heard, for the purchase of the Victoria Furnace, at Goshen, Va., by some capitalists who propose, if they secure the property, to make some important changes in the construction of the furnace and start it up again.

Can-Body Forming Machine No. 173.

The machine illustrated in the accompanying engraving is adapted for forming square, oval or irregular shaped tins not exceeding 10 inches in length or 12 inches across corners, such as fancy biscuit tins, tea canisters, and a variety of other work of a similar character. It is used to advantage on decorated tin, as it does not mar the decoration.

The form corresponding to shape of body to be made is mounted on a horizontal shaft and secured by a nut, and may be quickly removed and another form substituted as required.

The two forming rolls are mounted in vertical slides working independently of each other, the springs shown at the top of the machine pressing them firmly against the tin as the form revolves. If desired one or more beads can be rolled in the bodies. The machine is geared three to one and the tight and loose pulleys on back shaft are 12 inches diameter by 3 inches face.

When operating the machine, the gears run continuously, and the shaft, on which the form is mounted, is started and stopped at pleasure by depressing the treadle, thus throwing in the clutch and then releasing the same. The weight is about 550 lbs. This machine is manufactured by E. W. Bliss, 17 Adams Street, Brooklyn N. Y.

Get the Best at First.

The Holyoke Machine Co., of Worcester, Mass., advertise in this issue their well-known Hercules Water Wheel. This wheel has many points of merit that strongly commend it to the attention of those who use water power. The most thorough tests have demonstrated its many good qualities. In Holyoke it is the standard water wheel, the aggregate horse power of the Hercules wheels in operation there being greater than that of all other wheels combined. These wheels are very popular in the South as well as in the North, having been in use for many years in a large number of Southern mills. There are four of the Hercules wheels now in operation in the big cotton mills of the Eagle & Phenix Manufacturing Co., Columbus, Ga., and Mr. John Hill, of that company, in writing, Feb. 25, 1885, to the Holyoke Machine Co., said: "Within the past four years I have ordered four 'Hercules' wheels, all of which have given the purchasers entire satisfaction. Three of the wheels are on regular duty in the Eagle & Phenix Mills. The first wheel ordered did so well that a 'Hercules' wheel has been added each time a new wheel was wanted. In the Eagle & Phenix Mills I supervise twenty water wheels of six different styles. The 'Hercules' is by far the most durable and best made wheel in use here, and, in fact, I know of no wheel its equal mechanically. It is all that can be desired in economy of water. In fact, is a strictly first-class wheel in every way, and the wheel to buy, use and depend upon."

That is a pretty strong letter, but it is only a sample of letters received by the manufacturers of this wheel. Among the recent shipments of wheels have been two—one of 54-inch and one of 60-inch—to a Georgia cotton mill. Two Hercules wheels are being put in at Natick Cotton Mill, and one at the Artic Mill of B. B. & R. Knight near Providence. This will make eleven wheels furnished to this well-known firm, one of the most prominent in the manufacturing line in New England. Hercules wheels are sold in England, Ireland and Scotland, and on the Continent, a cable order having been received only a few days ago for one to go to France. The manufacturers say: "The Hercules gives the most power for its size and the highest average percentage from full to one-half gate of any wheel ever made." Their advice to all users of water wheels is to "get the best at first." If you are interested in water wheels, if you want a new wheel or a larger

wheel, or a better wheel than you are using, write to the Holyoke Machine Co., Worcester, Mass., for catalogue No. 3.

The Wiswell Mill.

As bearing upon the value of the Wiswell Mill, the following replies to enquiries sent to managers of mines, who were using the Wiswell machinery by the Hailey River Times, will be of interest.

Question—How does amount of work done by Wiswell Mill compare with 20-stamp mill?

Answer—Wiswell Mill crushes 20 tons in 24 hours.

THOMAS C. DUNN,
Charlotte, N. C.

Q.—Is your Wiswell Mill working to your entire satisfaction?

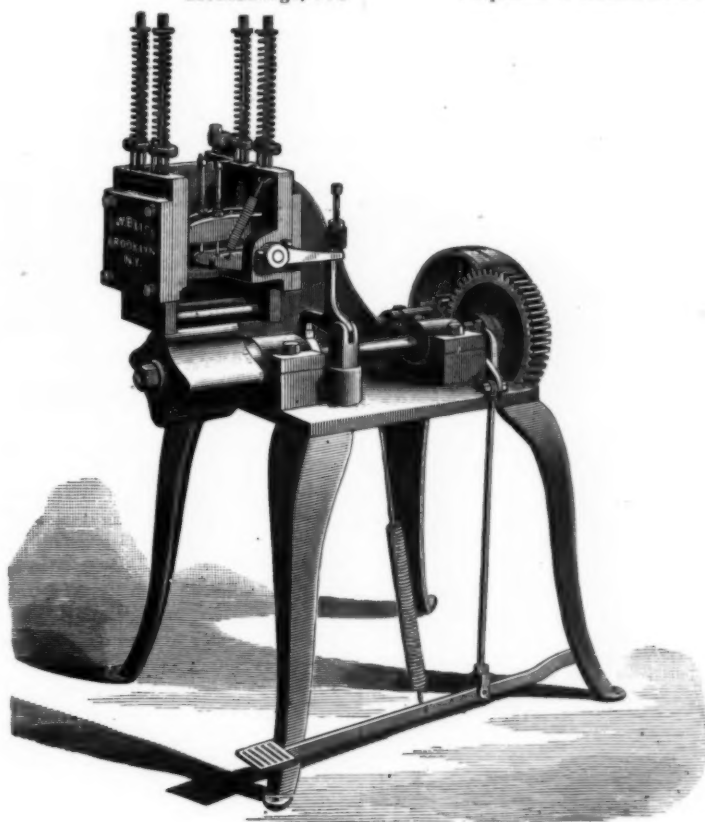
A.—The Wiswell Mill is doing first class work.

WM. JENKINS,
Charlotte, N. C.

Q.—Is your Wiswell Mill any better than stamps for saving gold?

A.—Yes. I am saving from 35 to 40 per cent. more gold than with the stamp mills.

E. B. WITHERELL,
Breckenridge, Col.



CAN-BODY FORMING MACHINE NO. 173.

Q.—What do you know about Wiswell Electric Mill? Is it any better than stamps for saving gold?

A.—Positively better—particularly for saving gold. Will write in full.

F. M. JOHNSON,

37 Post street, San Francisco, Cal.

From a large number of letters received by D. D. Brockway, the agent here, the Times republishes extracts as follows:

RUDISIL GOLD MINE,
CHARLOTTE, N. C. July 18, 1885.

Wiswell Electric Machinery Company:

Having had one of your Electric Pulverizing mills in operation at this mine for the past five months, I take pleasure in saying that it has in every particular proved all you have claimed for it as the best machine ever yet put in operation for milling and amalgamating gold ores.

At this mine it has been thoroughly tested, having ground some 500 tons of hard and soft ores, the result of which has been perfectly satisfactory. On free milling ore we have taken out fully 95 per cent. of the gold shown by assay, and on hard sulphuret ores we have invariably taken from 20 to 40 per cent. more gold than could be saved by stamp mill from the same ores. The facility with which the amalgamated quicksilver can

be drawn from the mill and fresh quicksilver put in without stopping the work, and the ease and rapidity with which it can be cleaned up when required merit especial commendation. In fact, the mill seems perfect in its working, and it would be hard to point out any way in which it could be improved.

I have given particular attention to the matter of wear and tear, in which I have been most happily disappointed. After five months' constant usage, the mill is in as good condition as the day it started, and it has never stopped one minute for repair of any kind.

As the mill works free ores so perfectly without electricity, saving, as above stated, 95 per cent. of all the gold in the ore, I do not now use the battery on such ores. In the case of sulphuret or rebellious ores, the electric current is of great service, as it largely increases the yield of gold from such ores. From numerous experiments and tests, I should say we gained 25 per cent. in our gold yield by the use of the battery in working sulphuret ores.

We shall require another mill, which we hope you will be able to send us next month.

THOS. C. DUNN,
Proprietor of Rudisil Gold Mine.

of ore that I work than can be gotten with any other mill. 1st. This mill will do more work than the "ten-stamp," with one-half the wear and tear. 2d. It requires less power and help to manage it. 3d. You can work one pound, or one ton, or 100 tons, and clean the mill up perfectly clean in 20 minutes. You can clean the mill as clean as a plate, and make a milling test of one pound or one ton, and give the result in 20 minutes from the time you stop feeding. And this is not like the stamp, if you use too much, or too little mercury with the stamp, you will lose gold. With this mill you simply put in 4, 5, or 6 pounds of mercury and then commence feeding, and then run all day or a whole week it is all the same.

You can clean up at any time, in 20 minutes, and get your amalgam; and for certain I have taken out, in over 100 trials, from \$1.50 to \$15.50 per ton more than could be got with the stamps. It will work tailings just as well. In working tailings with stamps, you are liable to break your shoes and dies. This mill you cannot break, put anything you like into it. If you send me one hundred pounds of your ore I will mill it and send you the result.

You can run this mill perfectly safe with the very cheapest help. It requires no experience only to retort your mercury once in a while, and keep it clean.

Another thing I want to say: Three men can set this mill up in five days—needs no millwright. I can frame all the timbers in one day. It requires about 1½ inches of water to run an 8-horse power engine. Please let me hear from you.

Yours, etc.,

F. M. JOHNSON.

Compelling Stamp Mills to Shut Down.

BRECKENRIDGE, COL., Aug. 3, 1885.

D. D. BROCKWAY, Hailey, Idaho:

My Dear Sir—In order to express myself more plainly regarding the Wiswell Mill, I will enclose a record of the mill as compared with stamps, on the same ore. I have treated quite an amount, but these cases are where the mill has come in competition with the stamps.

No. 1 lot, the mill saved 40 per cent. more than the stamps.

No. 2 lot, 44 per cent.

No. 3 lot, 45 per cent.

No. 4 lot, 49 per cent.

No. 5 lot, 40 per cent.

The average of all the ore was 85 per cent. of the gold. Of course from the above record the proprietors of the stamps do not like me much. In fact, I have been the cause of closing one stamp mill, and it looks as if the other was tottering. I will be pleased to give you any further information.

Yours truly,

E. B. WITHERELL.

The Best in the Market.

T. J. Cooper, President Reaser Balance Valve Company, of Chicago, who is also heavily interested in the Mayflower, Jay Gould and other mines in this region, writes to Colonel Havens, Superintendent of the Mayflower and Idahoan mines here: I believe the Wiswell Electric Mill to be the best thing in the market.

T. J. COOPER.

CHICAGO, July 20, 1885.

Other Testimonials.

ISHPEMING, MICH., Aug. 4, 1885.

D. D. BROCKWAY:

Dear Sir—We have not got the second Wiswell Mill running yet, but expect to very soon. The Wiswell, as you know, does from 3-5 to 4-5 as much as our 25 heads of stamps, and saves rather more than they do by amalgamation, at an increased cost for both of only 20 per cent. in running the mill, so far as fuel is concerned.

Yours in haste,

H. C. SOUTHWORTH,
Manager Ropes G. & S. M. Co.

THE MARKETS.

OFFICE MANUFACTURERS' RECORD, 1
BALTIMORE, Sept. 23, 1885.

Nothing of importance has occurred in the general business situation since our last issue. There are some reports of less activity in certain lines, but in other directions a better trade is reported. With the exception of the railroad fights, which tend to demoralize business, everything is favorable for a good active fall and winter trade.

In manufactured iron there is a decided improvement in the size as well as in the numbers of orders. Under this increased demand the market has strengthened and prices have slightly advanced, with the gen-

I do not hesitate to indorse all that has been stated above by Mr. Dunn.

WM. JENKINS,
Superintendent Rudisil Mine.

Extracts from letters written by the manufacturers to Mr. Brockway:

BOSTON, June 25, 1885.

We have orders to ship another mill to the Black Hills. * * *

We hear from Colorado that they are running the two mills there with excellent results. They say it cleans up the rusty gold which abounds there splendidly, and there is great excitement over the gold it turns out. We hear from California that things are starting there, and they want more mills. All the mills are wearing well.

* * * We have just sent another mill to Leadville, and have two more ordered. We have just sold one for this State (Massachusetts), and have orders for 10 additional mills for California.

A Very Flattering Testimonial.

37 POST ST., SAN FRANCISCO,
August 3, 1885.

D. D. Brockway:—I received, and answered your telegram, and will say that I am working my sample mills here and do get absolutely better results in every sample

Ref. Bar Iron, 1 to 6x½ to 1.....	lb.	1.20	2	c
" " " 1 to 4x½ to 1.....	"	1.50	2	c
" " " ½ to 3, round and	"			
Square.....	"	1.20	2	c
Hoop Iron, ½ wide and upward...	"	2.50	2	c
Black Iron, from ½ to 6 in. wide...	"	2.50	2	c
Horse Nail.....	"	3.00	3	c
Norway Nail Rod.....	"	2.00	2	c
Black Diamond Cast Steel.....	"	9	10	c
Machinery Steel.....	"	2.50	4	c
Spring Steel.....	"	3.00	4	c
Common Horse Nails.....	"	2	9	c
Railroad Spikes, 5½x9-16.....	"	2	20	c
Roller Tubes.....	"	57½	off list	

The local pig iron market continues dull, with only a limited amount of business doing. We quote as before, viz:

Baltimore Charcoal Wheel Iron (all Baltimore ore).....	\$8 00@9 00
Virginia C. B. Charcoal Wheel Iron....	28 00@30 00
Anthracite, No. 1.....	19 00@20 00
" " " " " " " "	17 00@18 00
" " " " " " " "	15 00@16 00
Mottled and White.....	13 00@14 00

The activity previously reported in the hardware market continues, and orders are coming in quite freely for goods. While there have been no important advances in prices during the week, several lines of small articles have been marked up, and the tendency is thought to favor rather firmer prices.

Nails are very scarce in this market and the demand is active. Several houses issued cards Tuesday announcing an advance in price to \$2.30. Inferior nails can still be purchased at lower figures.

PHILADELPHIA, September 21, 1885.

The situation in the eastern Pennsylvania iron trade has not materially improved, although there is a very fair amount of business being transacted from day to day. Several makers are attempting to advance the prices of iron and create the impression that the market is short of stocks. It is not likely that the furnace men will be able to advance prices any, although several sales have been made at 50 cents more than two weeks ago. The market seems to be on the turning point. There is a great deal of inferior iron offered and to be offered. Number one foundry, of standard make, is readily sold at \$18. Number two, for good make, is \$16.00 to \$16.50, but several transactions were made at \$15.50. Good gray forge sells readily at \$15, but there is gray forge selling from that down to \$14. For desirable iron prices are firmer than they have been, and now and then a buyer can be induced to pay a little more money. Foreign material is also in better demand and firmer. There are a number of inquiries in hand for Spiegeleisen and Bessemer, with \$20 quoted for 20 per cent. Spiegeleisen, and \$19 to \$20 for Bessemer. The bar mills have more business on hand than for several months, and reports received seem to confirm the statement that there is a steady run of business from all quarters. There is room for great improvement, particularly in car works, locomotive works and large machine shops. The plate mills within a week have booked four or five hundred tons of iron in lots running from 20 to 50 tons. The structural iron mill owners have taken only small orders, but exceptionally large transactions are scarcely to be expected. There are heavy enterprises on hand which will keep the structural mills running all the fall and winter, full time or nearly. Plates are 1.90 to 2 cents in large lots and 2 to 2.10 in small lots. Angles are quoted at 1.90, and occasionally sold at less. The nail trade is strong and active. Every keg that can be pared is sent westward, where it seems there is a determination on the part of the manufacturers to hold their position, as long as it is possible to obtain supplies from other quarters. The eastern makers are rejoiced to be able to help their western friends, and will not become weary of a well doing. Our advices from rail mills throughout the State show a continuance of business at \$29, with the probability of an advance to thirty. The rail men, it seems, intend to restrict their production according

to agreement, and if so there is nothing in the way of \$30. There is a great deal of inquiry for old material, and everything that is offered is picked up at good prices. The anthracite coal trade is rather inactive. The general industries of the city are slowly improving.

Specially reported by ROGERS, BROWN & Co., Pig
Iron Commission.
CINCINNATI, Sept. 21, 1885.

A firm tone has characterized the pig iron market during the week. There are backsets here and there. Buyers in some cases claim to be getting iron at lower figures than ever, and transactions are reported that would indicate the market to be as bad off as in July; but fortunately these are exceptions and not the controlling influence. The makers of standard brands are selling freely at slightly advanced prices. 500 tons of Southern coke, No. 2 foundry, sold at \$15.25 cash at Ohio river. One lot of standard mill brought \$1 advance on sale of same iron in July. Renewals of orders at old prices are refused by nearly all dealers daily. Another month will show whether this improvement has any good foundation in general trade, or is a temporary thing. We quote for cash, f. o. b. cars at Cincinnati:

HOT-BLAST FOUNDRY.			
Ohio and Southern Strong Coke	No. 1.	\$16	00@17 00
"	"	No. 2.	15 00@16 00
"	"	No. 3.	14 00@15 00
Ohio Soft Stonecoal,	"	No. 1.	16 50@17 00
"	"	No. 2.	16 00@—
Mahoning and Shenango Valley Coke,			
No. 1.			16 50@17 50
CHARCOAL IRON.			
Hanging Rock,	No. 1.	\$19	00@20 00
"	No. 2.	17	00@19 00
Tennessee and Alabama,	No. 1.	17	50@18 50
"	No. 2.	16	50@17 50
FORGE.			
Strong Neutral Coke		\$13	50@—
Mottled		12	75@—
Cold Short.		13	00@—
CAR WHEEL AND MALLEABLE.			
Southern Car-Wheel Iron.		22	00@24 00
Hanging Rock C. B.		25	00@27 00
" W. B.		30	00@33 00
Lake Superior Malleable.		22	00@25 50

Specially reported by E. L. HARPER & Co.
CINCINNATI, Sept. 21, 1888

The general demand for iron has abated somewhat since our last writing, so that the market is a shade easier, though prices are well sustained. The noteworthy features of the trade at the moment are the facts that the producers of steel rails are full of orders for all they can supply during the balance of the year, and the car shops are a little more active. We quote as prices current, cash f. o. b. cars at Cincinnati:

	FOUNDRY.	Cash.
Hanging Rock Charcoal, No. 1.....	\$18 50	\$9 18 50
" " " " " " " " " " " " " "	" " " "	" " " "
Southern Charcoal " " " " " " " "	" " " "	" " " "
" " " " " " " " " " " " " "	" " " "	" " " "
Strong Neutral Coke, " " " " " " " "	" " " "	" " " "
American Scotch, " " " " " " " "	" " " "	" " " "
	GREY FORGE.	
Neutral Coke.....	13 00	\$13 50
Cold Short.....	13 00	\$13 50
	CAR WHEEL AND MALLEABLE.	
Hanging Rock, strictly cold blast.....	25 00	\$25 50
Hanging Rock, strictly warm blast.....	21 00	\$21 50
"Cranberry," N. Carolina Warm Blast.....	25 00	\$25 75
Amherst and Virginia Warm Blast.....	19 00	\$20 00
Lake Superior Charcoal, all grades.....	19 00	\$20 00

Specially reported by W. B. BELKNAP & Co., Nails,
Wire, Iron, Hardware, Carriage and Wagon
Goods.

LOUISVILLE, KY., Sept. 21, 1885.

The market for the past week has been a remarkably steady one. The boom prophets have ceased from their labors.

Bar Iron.—With all the talk about the improvement East and West, there has been little manifested in bar iron. The demand is fair, but the number of mills recently put in operation has dispelled the fears on the part of buyers, and as buying is largely a matter of sentiment, this has kept the price down.

Sheet.—Heavy gauges are scarce at anything under fancy quotations, made by such mills who, anticipating a scarcity, have held off in order to supply immediate demands.

Light sheet are in short supply of immediate delivery, but the mills promise to be in better shape by October or November, so that the scarcity is practically over.

Nails.—The most interesting of all the items on the list at present is nails. The struggle at the mills is a severe one, and it is freely predicted that no solution will come until cold weather frees it.

Barb Wire.—We are advised by the manufacturers that an advance may certainly be looked for, but this has been promised so frequently that we are always doubtful of its fulfillment.

General trade is ample in its volume and in fair shape. The Tobacco Jubilee here on the 17th was a great success in its way, and resulted in attracting a large number of strangers to the city.

Specialty reported by GEO. H. HULL & Co., Commission Merchants for the sale of Hot and Cold Blast Pig Iron.

LOUISVILLE, KY., Sept. 21, 1885.

The market for pig iron is attended with a much firmer tone and a satisfactory volume of sales. Some of the furnaces have advanced 25 to 50 cents on some grades. No considerable sales have been made at the advance, but considerable sales have been made of the grades and brands not already advanced. Several buyers are in the market for three and six months' supply. It is likely all the grades and brands not already advanced will soon follow. We quote for cash in round lots as below:

	PIG IRON.	
Southern Coke, No. 1 Foundry.....	\$16 00@17 00	
" " " " " " " "	15 00@16 00	
" " " " " " " "	13 50@14 50	
Hanging Rock Coke, No. 1 Foundry....	15 00@16 50	
" " " " " " Char'l	20 00@21 00	
Southern Charcoal, No. 1 Foundry	17 50@18 50	
Silver Gray, different grades.....	14 00@15 50	
Southern Coke, No. 1 Mill, Neutral...	13 00@13 50	
" " " " " " Cold Short.....	12 50@13 00	
Southern Charcoal, No. 1 Mill.....	16 00@17 00	
White and Mottled, different grades....	11 00@12 50	
Southern Car Wheel, standard brands..	23 00@24 00	
" " " " other brands.....	18 00@20 00	
Hanging Rock Cold Blast.....	23 00@24 00	
" " Warm ".....	18 00@20 00	

Specially reported by **LOWE & TUCKER**, Brokers and Commission.

CHATTANOOGA, TENN., Sept. 21, 1885.

While manufacturers claim that there has been no actual advance in prices, yet it seems inevitable that such must soon be the case. It is difficult at the present time to place orders for immediate delivery, and proprietors decline to enter orders for future delivery excepting at advanced rates, and absolute necessity will soon compel merchants and consumers to offer better prices than they have been paying. Shipments have been very active and likely to continue so. Until there is a more decided change in prices we shall make no change in quotations:

No. 1 Foundry.....	\$14 50	@15 50
No. 2 Foundry.....	13 50	@14 50
Acacia Scotch.....	13 50	@14 50
Gray Forge.....	10 00	@11 00
Car-Wheel Iron.....	22 00	@24 00
Ores, Red and Brown.....	1 50	@ 2 25
Furnace Coke.....	2 00	@ 2 50
Nails, car-load lots, 30 days.....	—	@ 2 75
Bar Iron, per 100 lb., 30 days.....	—	@ 1 55
Old Rails.....	—	@16 00
Old Wheels.....	—	@12 50
Wrought Scrap, No. 1.....	—	@ 55
No. 2.....	—	@ 40
Cotton Tie Clippings.....	—	@ 50
Cast Scrap.....	—	@ 150
Railroad Spikes.....	—	@ 1 55
Railroad spikes.....	—	@ 1 80
Light Steel Rails, long ton.....	38 00	@45 00
Barb wire—Cambria link.....	5	@ 5½
Barbed wire—four point galvanized.....	6	@ —
Barb ware.....	4½	@ —

Specially reported by W. H. SHIELDS, Pig Iron and Iron Ore, No. 305 Olive Street.

ST. LOUIS, Sept. 21, 1885.

There is an undoubted lull in the promised boom, and a cessation certainly in the undoubted increased activity in iron and all other departments of trade. Buyers who for the moment departed from their long-adhered-to policy of "hand to mouth" have apparently returned to it with increased confidence in its adaptability to the situation, and unloading is a process now less easy to accomplish, at even the low prices prevailing, than thirty days ago. The demand for old rails is increasing. We quote:

HOT-BLAST CHARCOAL.		
Missouri.....	\$15 00	@16 00
Southern.....	16 00	@17 50
Ohio.....	—	—
COKE AND COAL.		
Missouri.....	14 00	@16 00
Southern.....	15 00	@17 00
American Scotch.....	16 00	@19 00
MILL IRONS.		
Missouri.....	14 00	@14 50
Southern.....	13 50	@14 00
CAR-WHEEL AND MALLEABLE IRON.		
Southern.....	20 00	@24 00
Lake Superior.....	20 00	@23 00
MISCELLANEOUS.		
Old Wheels.....	14 00	@14 50
Old Rails.....	15 00	@17 00
Wrought Scrap.....	55¢	65
Cast Scrap.....	45¢	55
Connellsville Coke, East St. Louis.....	5	50

The following Patents were granted to citizens of the Southern States, bearing date Sept 15th, 1885. Reported expressly for this paper by Louis Bagger & Co., Mechanical Experts and Solicitors of Patents, Washington, D. C.

Berry, S. C., Williamstown, W. Va. Stuffing box for steam engines.....	326,384
Berthelot, Victor, Cannon Store, La. Hook-buckle.....	326,385
Boulden, Holman, Millersburg, Ky. Knock-down box.....	326,362
Brown, N. H., Mobile, Ala., Locking-bolts.....	326,111
Burroughs, W. F., Fort Worth, Tenn. Centre or other table.....	326,102
Comegys, E. W., Edesville, Md. Corn-shocker.....	326,403
Crouse, G. W., Lexington, N. C. Wash-tub.....	326,480
Dobb, W. A., Smithville, Miss. Combined harrow and corn-planter.....	326,206
Fry, C. H., Jr., Wheeling, W. Va. Cap for fruit jars.....	326,492
Gary, E. S., Baltimore, Md., and H. Heath, Elysville, Md. Spooler.....	326,422
Gooch, M. M., Jefferson, Tenn. Nursery chair.....	326,110
Gross, H. P., Baltimore, Md. Basket.....	326,499
Hoffman, Ferdinand, and C. Ferst, Louisville, Ky. Barber's chair.....	326,503
Martinez, A. A. New Orleans, La. Lubricating composition.....	326,311
McGee, J. H., Eurekaton, Tenn. Quilting-frame.....	326,133
Mitchell, Robert, Atlanta, Ga. Wardrobe-bedstead.....	326,316
Nadoff, Henry, Louisville, Ky. Faucet and bushing.....	326,319
Perry, A. C., Covington, Ga. Hand and arm rest.....	326,326
Phillips, Richard, Nacogdoches, Tex. Portable pump, &c.....	326,146
Pierce, H. M., Nashville, Tenn. Apparatus for utilizing wood gases.....	326,451
Pierce, H. M., Nashville, Tenn. Utilizing wood-gases for metallurgical purposes.....	326,452
Shepard, Edwin, Staunton, Va. Rotary shears.....	326,163
Sisk, F. M., Newnan, Ga. Gin-saw filing machine.....	326,167
Tate, R. M., Somerset, Ky. Animal trap.....	326,460
Taylor, W. W., New Orleans, La. Steam trap.....	326,347
Tinsley, W. P., Dallasburg, Tex. Buckle attachment.....	326,350
Vardell, W. B., Charleston, S. C. Rice cleaning machine.....	326,532
Walker, J. M., Roopville, Ga. Combined planter, harrow and cultivator.....	326,180
Wilkinson, J. M., Inka, Miss. Boot-strap.....	326,187
Zimmerman, G. F. S. Frederick, Md. Shutter-blower.....	326,331

PATENT LAW. TRADE MARK LAW.

Attorney at Law.

417 OLIVE STREET, ST. LOUIS, MO.
REFERENCES:
Branch, Crookes & Co.,
Liggett & Myers Tobacco Co.,
Excelsior Manufacturing Co., } St. Louis.

C. D. MOODY,
Patent Solicitor.

AND EXPERT IN
—Patent Causes,—
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WM. H. BABCOCK,
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PARKER GAS ENGINE.

Guaranteed to Run with Less Gas than Any Other Gas Engine Known.

Always Ready
to Start.

2 to 10 HORSE
POWER.

No Boiler.

No Coal.

Lighted by Electric
Spark.

No Ashes to
be Removed.

Simple.

No Chimney.

No Engineer.

Durable.

No Smoke.

Effective.

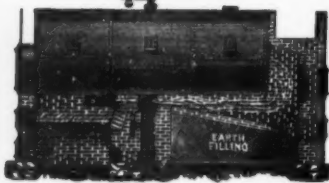
No Smell.



No Slide Valve to Get Out of Order. Does Not Hazard Insurance. No Small Parts to Clog Up. Is Noiseless in Running. Requires no Matches to Ignite the Gas. Can be Run with Any Kind of Gas. It is the only Engine that can be run equally as well with Gasoline Gas or Carburetted Air, as with regular fixed gas. Speed can be adjusted while running from 80 to 300 revolutions per minute.

YONKERS MFG. CO. SOLE PROPRIETOR AND BUILDER, Salesroom, 16 Bay St., New York. SEND FOR ILLUSTRATED CIRCULAR AND PRICE-LIST.

JARVIS PATENT FURNACE FOR SETTING STEAM BOILERS.



Economy of Fuel, with increased capacity of Steam Power. Like the Siemens Process of Making Steel, it utilizes the waste gases with hot air on top of the fire. Will burn all kinds of waste fuel without a blast, including Slack Coal, Sawdust, Logwood Chips, &c. Send for Circulars.

Jarvis Engineering Co.,

A. F. UPTON, Treas. and Gen'l Manager, 61 Oliver St., Boston, Mass.

JOSHUA C. COE, Agent for Maryland and Virginia, O'Donald's Wharf, Baltimore, Md.

SOUTHERN REFERENCES:

Eagle & Phenix Mfg. Company, Columbus, Ga.
Anniston Mfg. Co., Anniston Ala.
J. P. King Mfg. Co., Augusta, Ga.
Rose Mining Co., Charleston, S. C.
Maryland Pavement Co., Baltimore, Md.
Brush Electric Light Co., Baltimore, Md.
Etrick, Matson and Battersea Mfg. Co's., Petersburg, Va.
Rasin Fertilizing Co., Baltimore, Md.
Tanner & Delaney Engine Co., Richmond, Va.
Sibley Mills, Augusta, Ga.

Graniteville Mfg. Co., Graniteville, S. C.
Charleston Bagging Co., Charleston, S. C.
P. H. Mayo & Bros., Richmond, Va.
Phosphate Mining Co., Beaufort, S. C.
Brush Swan Electric Light Co., Norfolk, Va.
Columbus Ice & Refrigerator Co., Columbus, Ga.
Lenoir Manufacturing Co., Lenoir, East Tennessee.
Vance Mill, Graniteville, S. C.

PHOSPHOR-BRONZE



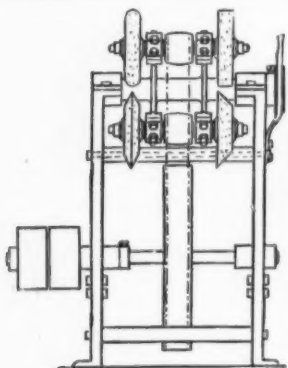
The celebrated alloys in Wire, Rods, Sheets, Bolts, Wire Ropes, Wire Cloth, Castings, Ingots, etc. Pamphlets and particulars on application to

THE PHOSPHOR-BRONZE SMELTING CO., Limited.

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BLAISDELL'S

Eight Wheel Emery Machine,

FOR GRINDING

ALL KINDS OF IRREGULAR CUTTERS.



GOODELL & WATERS.

Manufacturers of all kinds of WOOD-WORKING MACHINERY, Warerooms, 115 1/2 Liberty Street, New York. J. H. BLAISDELL, Manager.

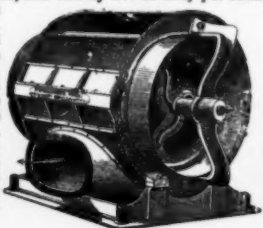
THE MACKENZIE PATENT CUPOLA AND BLOWER

Send for Circular to SMITH & SATRE MFG. CO., Proprietors, 245 Broadway, N. Y.



This Cupola has made a great revolution in melting Iron. It differs from all others in having a CONTINUOUS TUYERE, or in other words, the blast enters the fuel at all points. Above one ton capacity per hour, they are made oval in form. This brings the blast to the center of the furnace with the least resistance and smallest possible amount of power, and in combination with the continuous Tuyere causes complete diffusion of the air throughout the furnace, and uniform temperature, melting ten or fifteen tons an hour with the pressure of blast required to melt two or three tons in an ordinary Cupola. It also enables us to save very largely in time and fuel, the experience of our customers showing a gain of twenty-five to fifty per cent. in time, and twenty-five to forty per cent. fuel over the ordinary Cupola, and a BETTER QUALITY OF CASTING, especially in light work. This is due to the thorough diffusion of the air and more perfect combustion, extracting less carbon from the iron, making a softer and tougher casting.

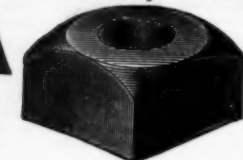
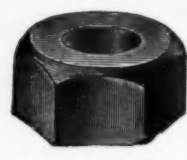
We manufacture these Cupolas of any desired capacity, numbered from 1 to 20, inclusive, the numbers indicating the melting capacities in TONS PER HOUR—No. 1, one ton; No. 2, two tons; No. 3, three tons per hour, and so on up to 15, or 20 tons. We have improved the construction of these Cupolas in every way, have increased their strength and durability, and sought to make them as convenient for working and repairs as our own and the experience of our customers could suggest.



HOOPES & TOWNSEND,

MANUFACTURERS,

PHILADELPHIA, PA.



KEYSTONE BOILER RIVETS.

Cold-Punched Square and Hexagon Nuts.

Finished and Case-Hardened Steel Hexagon Nuts.

BRIDGE RODS AND RIVETS.

BUILDERS' IRON WORK.

TANK AND COOPERS' RIVETS.

THE Stockport Gas Engine UNEQUALLED

FOR
Simplicity,

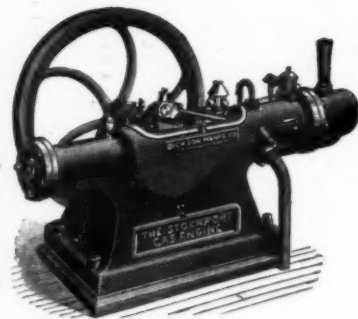
Durability,

Reliability,

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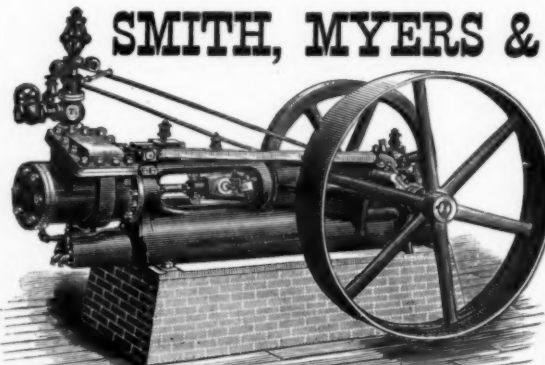
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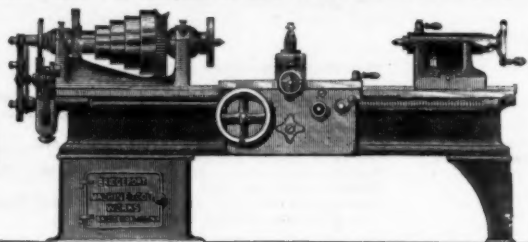
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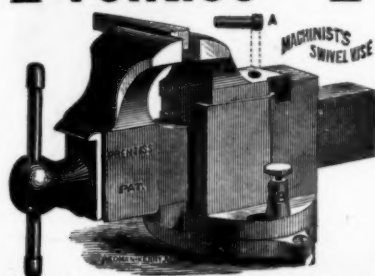
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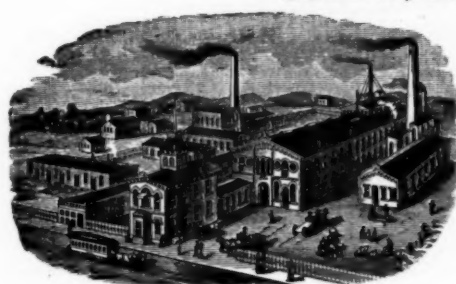
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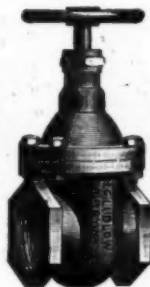
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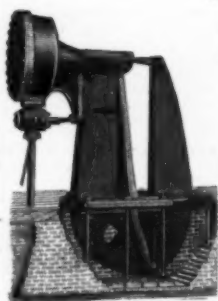
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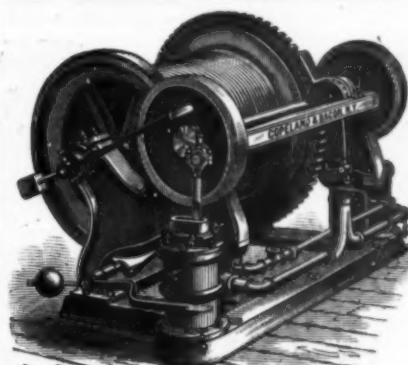
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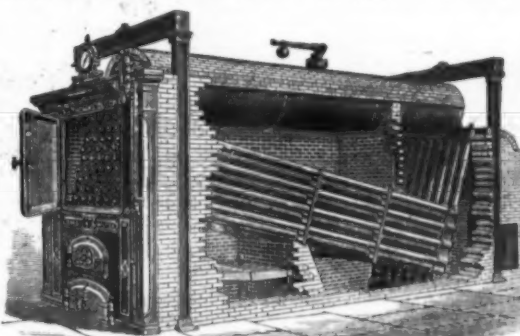
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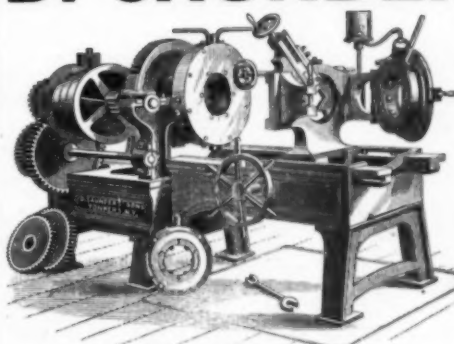
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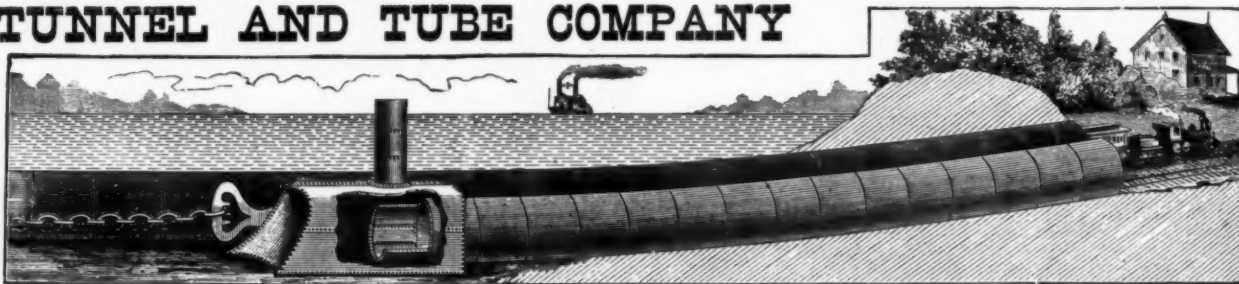
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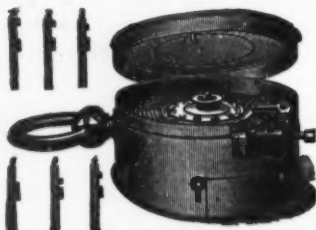
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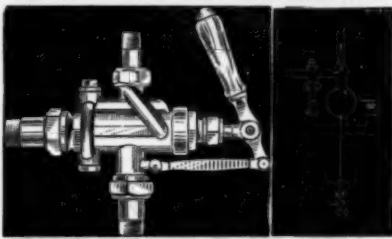
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WANTED.—By a young man—double-entry book-keeper, good and rapid penman—a situation where bookkeeping, writing or mathematics are involved; good credentials. Will give careful and undivided attention to business. Address A, care **MANUFACTURERS' RECORD**.

A NEW manufacturing enterprise in the South wants more capital to provide facilities to meet increasing business. Splendid field; location all that could be desired; a fine opportunity for investment. Address D. S., care **MANUFACTURERS' RECORD**.

HAVING the requisite practical and some business experience, and an acquaintance that would be useful, I would like to engage with some cotton mill to take charge. Address A. E., care **MANUFACTURERS' RECORD**.

A SCOTCHMAN of 20 years experience in the cotton and woollen manufacturing trade, is open for engagement as manager, or in any capacity where his experience and practical knowledge would be required. Is thoroughly posted in all details. Address W. M., care **MANUFACTURERS' RECORD**.

WANTED.—A practical bucket maker. To the right sort of a man who has had experience in working cedar and white pine, and can run a shop successfully, a good inducement will be offered. Farker Manufacturing Company, Knoxville, Tenn.

WANTED.—By an energetic, live young man a partner with \$10,000 to \$20,000, to engage in the tobacco business in Piedmont, North Carolina. Best of reference given, showing him qualified to handle business. Address Tobacco, care **MANUFACTURERS' RECORD**.

WANTED by a qualified mining engineer a position as superintendent or manager of a mine in the South. Accurate mine surveys made and ventilation attended to. Address Geo. D. Stonestreet, Mining Engineer, Box 397, Birmingham, Ala.

A FIRST-CLASS MOULDER with moderate capital, also a pattern-maker, can secure an interest in a paying business in the South. Business now in fine condition, but without sufficient facilities to do all the work that can be secured. Additional capital needed. Address H. & Co., care **MANUFACTURERS' RECORD**.

FOR SALE.—I offer for sale a half interest in pressed brick works making 1,000,000 pressed brick a month, and the management of the works to the buyer. The best paying property in North Texas. Demand for the brick unlimited. Address: J. B., care **MANUFACTURERS' RECORD**.

Managers of mills, factories, furnaces, mines, etc., and parties starting manufacturing enterprises, and needing machinery or supplies of any kind, will find it profitable to consult the advertising columns of the **MANUFACTURERS' RECORD**. Its pages contain names of the best houses in the country among manufacturers of and dealers in machinery and mill supplies.

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JACKSON & TYLER,

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—New Engines.—

- One Engine, 1½ H. P., 3x5 Vertical.
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- Two Engines, 8 H. P., 6x8 Vertical.
- One Engine, 8 H. P., 6x8 Horizontal.
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- One Engine, 8 H. P., 6x8 and Boiler on Base.
- One Engine, 4 H. P., Baxter Engine and Boiler.

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- (These Engines are as good as new.)
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Prices and Full Information given on Application.

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FOR SALE.

I shall offer for sale at public auction, on the premises, on

Wednesday, September 30, 1885,

all that valuable property known as "THE SUFFOLK COTTON MILLS," consisting of real estate in Suffolk, with the necessary buildings and machinery, representing an investment of more than \$40,000.

The machinery is in good order and adapted to the manufacture of cotton yarns and wrapping twine, for which there is a ready sale. Purchasers are invited to examine the property, which can be bought at a sacrifice.

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A Portable 20 Horse-Power Engine and Saw Mill, with large lot of timber, if desired, within 6 miles of Farmville, and 3 from railroad. Also one 8 Horse-Power Portable Engine, on skids, Horizontal Boiler, Talbot's make. It is now mounted on truck and used for threshing wheat. Address

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A Cotton Seed Oil Mill situated in the heart of the cotton region of Texas. The machinery is comparatively new and is in first-class condition. Railroad side track runs to the doors. Any one desiring to invest in this class of property should address—

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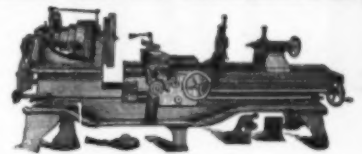


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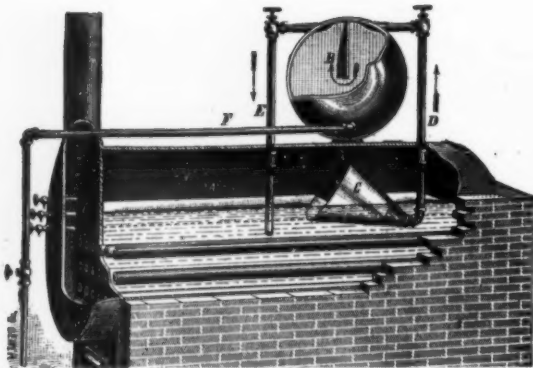
THE HOTCHKISS MECHANICAL BOILER CLEANER

Removes from Steam Boilers, Lime, Oil, Magnesia, and all other impurities of Boiler Water, and prevents Scaling, Foaming and Burning; but the object of this advertisement is to inform you that some

IMPOSTERS

in the South and West are offering Boiler Cleaners for sale as shown in cut on right-hand side below which is an old style of my cleaner. The cut on left side shows my improved style.

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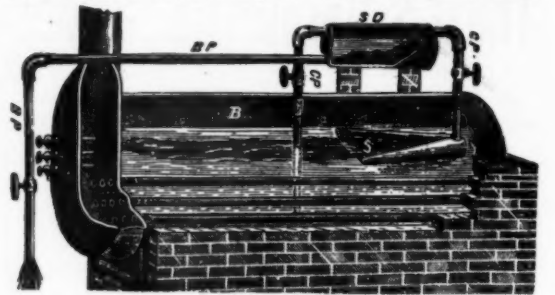


"HOW TO KEEP BOILERS CLEAN."

If you will send me your name I will send you an 88 page book, free of charge, giving useful information to Steam Users and Engineers. 65,000 already sent out and more to follow. The title of book is "HOW TO KEEP BOILERS CLEAN."

Compare this cut with one on left, and see if identical; the only difference being in shape of Skimmer and Drum.

S. D. Settling Drum. C. P. Circulating Pipe. B. P. Blow-off Pipe. S. Skimmer.



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JAS. I. HOTCHKISS,
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Prices as Low as any

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SHAFTING, PULLEYS, HANGERS and COUPLINGS, of latest and most approved designs.

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List of our Gearing Mailed on Application.

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Keep Your Steam Boilers Clean!

"An Ounce of Prevention Worth a Pound of Cure."

SAVE YOUR FUEL!

Warner's Purifier and Heater

[PATENTED JULY 21, 1885.]

The best way to *cure* your steam boilers of incrustation and sedimentary deposit is to *keep out* of the boiler that which causes incrustation and sediment.

The chief ingredients causing sedimentary deposits and incrustation are organic matter, carbonate of lime, sulphate of lime, carbonate of magnesia, sulphate or sulphuret of iron, and in salt water common salt.

The WARNER PURIFIER AND HEATER is the only machine which precipitates all impurities held in suspension, heats the water to the boiling point under full boiler pressure, separates and precipitates the mineral salts held in solution *before the water reaches the boiler*, and then injects the water thus purified into the boiler *boiling hot*. It is an automatic machine, entirely outside of the boiler, requiring absolutely no attention from the engineer except to blow off the accumulation of deposit from the bottom of the machine which acts as a mud-drum. All this is accomplished without the use of chemicals, by a purely mechanical process, regulated by the principles of natural philosophy.

No more "shutting down" of work to clean boilers—the machine does it all every day without interfering with the work, and by removing scale and preventing its formation, and heating the water to the boiling point *saves a large percentage of fuel*.

The WARNER HEATER AND PURIFIER COMPANY is now ready to furnish these machines on demand at very reasonable figures.

WASHINGTON, D. C., May 23, 1885.
This is to certify that I have made a careful examination of "Warner's Combined Purifier and Heater of Feed Water" in practical operation at the "Harris House" and "Post Building," in this city, and do not hesitate to pronounce it the *best machine* for the purpose ever invented. By its use the water goes into the boiler free from all impurities and heated to the boiling point under full boiler pressure, and as the result of the injection of pure water, the boiler is freed from scale and *kept clean*, while a large saving is made in fuel by the removal of the scale and heating the water to the boiling point *before it enters the boiler*. By the use of this machine the necessity of "shutting down" in order to blow out and clean the boiler is wholly obviated, as the impurities are all collected in the bottom of the machine, which can be blown out as many times a day as the engineer thinks proper without interfering with the workings of the boiler. I confidently commend this machine to all persons who own or use steam boilers, and am satisfied that its use will prolong the life of the boiler and make a handsome saving in the use of fuel.

(Signed) JOHN H. WILKERSON,
Inspector of Steam Boilers for District of Columbia, 220 7th Street, S. E.
"HARRIS HOUSE," COR. PENNSYLVANIA AVENUE AND E STREET, N. W.

WASHINGTON, D. C., June 23, 1885.
This is to certify that one of "Warner's Purifiers and Heaters of Feed Water" has been in use on one of the boilers of the Harris House, in this city, for three months, and has proved a perfect success. The boiler upon which the machine was placed was at the time covered with a heavy scale composed of animal and vegetable matter, lime, &c., which, by the use of this machine, has been entirely removed, the boiler being now as clean as when it came from the boiler-maker. This has been entirely accomplished, without the use of chemicals, by the injection of pure water through the "Purifier and Heater." This machine injects the water into the boiler heated to the boiling point under full boiler pressure, and by this means, together with the removal of the scale, results in a large saving of fuel. It is also invaluable in the purification of the water for laundry purposes. The machine is self-acting, and prevents the necessity of "shutting down" in order to blow out the boiler, as the impurities are all concentrated in the bottom of the machine, and can be blown out through the machine as often during the day as the engineer may deem advisable without interfering with the working of the boiler. I am convinced that its use will prolong the life of all boilers upon which it may be placed, save a large percentage of fuel, decrease the danger of explosion, purify the water for all purposes, and give general satisfaction. I confidently commend it to all hotels using steam and to owners of steam boilers generally as a much needed improvement that will do the work claimed for it thoroughly.

(Signed) JOHN H. HARRIS, Proprietor of Harris House, Washington, D. C.

WASHINGTON "POST" BUILDING, WASHINGTON, D. C., June 23, 1885.
This is to certify that one of "Warner's Purifiers and Heaters of Feed Water" was placed upon the boiler of the Post Building about 60 days ago as a test. At that time the boiler was covered with a heavy scale of animal and vegetable matter, lime, &c., which it was impossible to prevent. By the use of this Purifier and Heater, which injects the water into the boiler free from all impurities and heated to the boiling point, the scale has been removed and the consumption of coal reduced. The machine works itself and is invaluable as a purifier of water to all branches of business requiring pure water, such as hotels, laundries, &c., and a much needed adjunct to all steam boilers, prolonging their life, decreasing the danger of explosion and effecting a large reduction in the consumption of fuel. I confidently commend Warner's Purifier and Heater to all owners of steam boilers, being confident that their interests will be sub-served by its use.

(Signed) J. FRANK MCGUIRE, Superintendent and Engineer Post Building.

ADDRESS,

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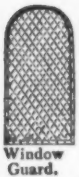
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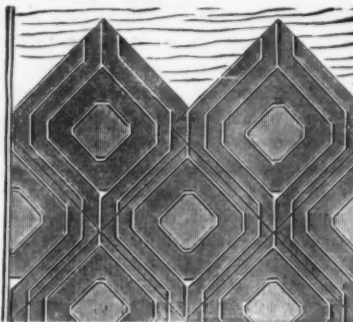
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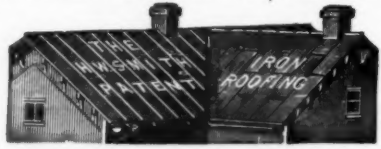
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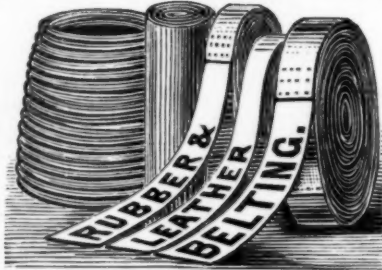
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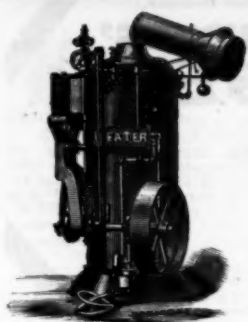
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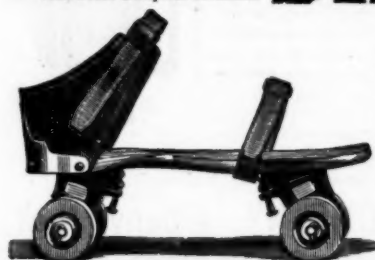
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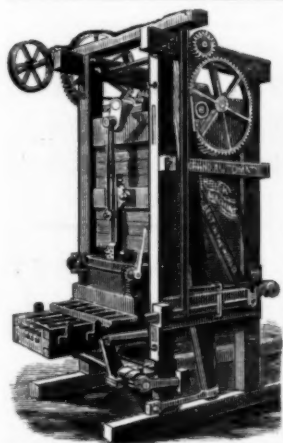
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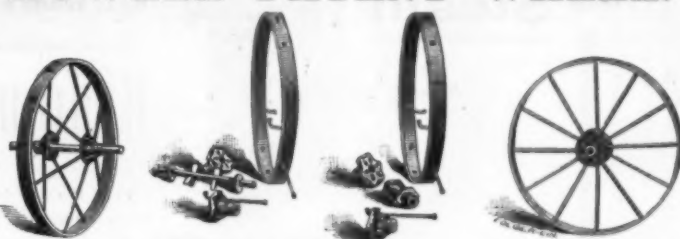
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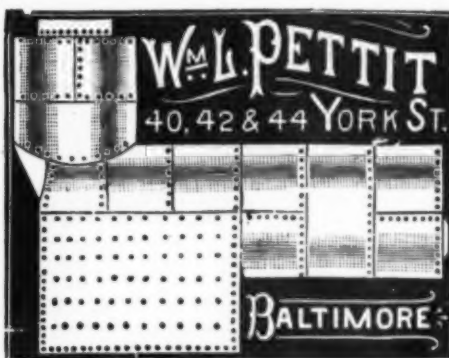
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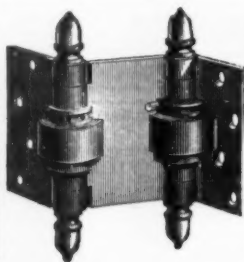
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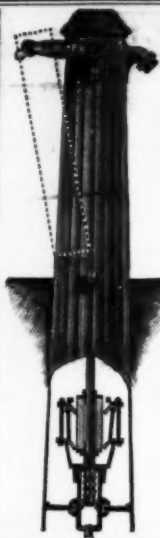
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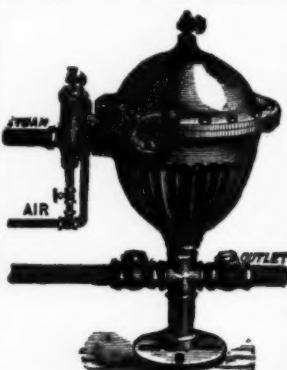
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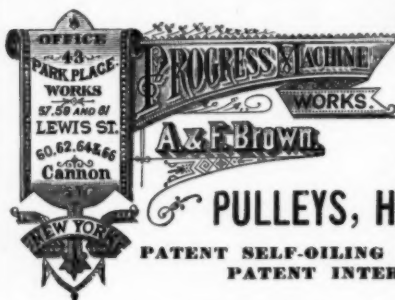
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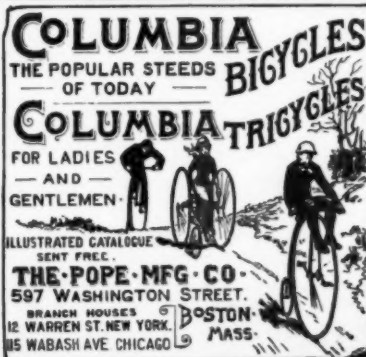
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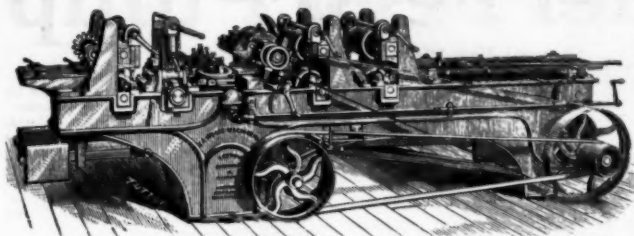
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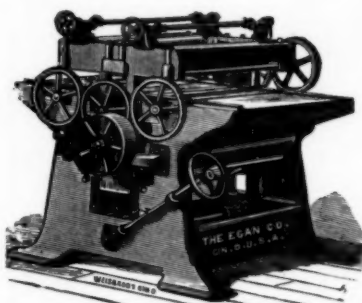
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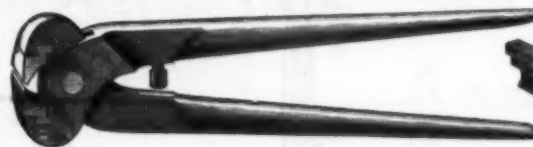
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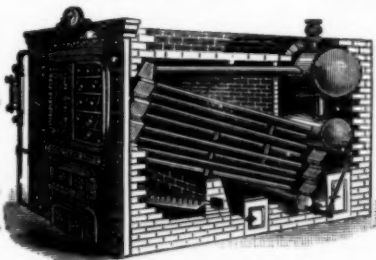
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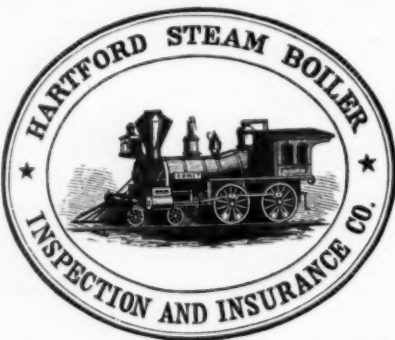
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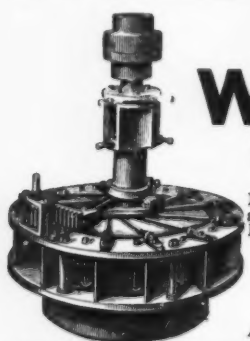
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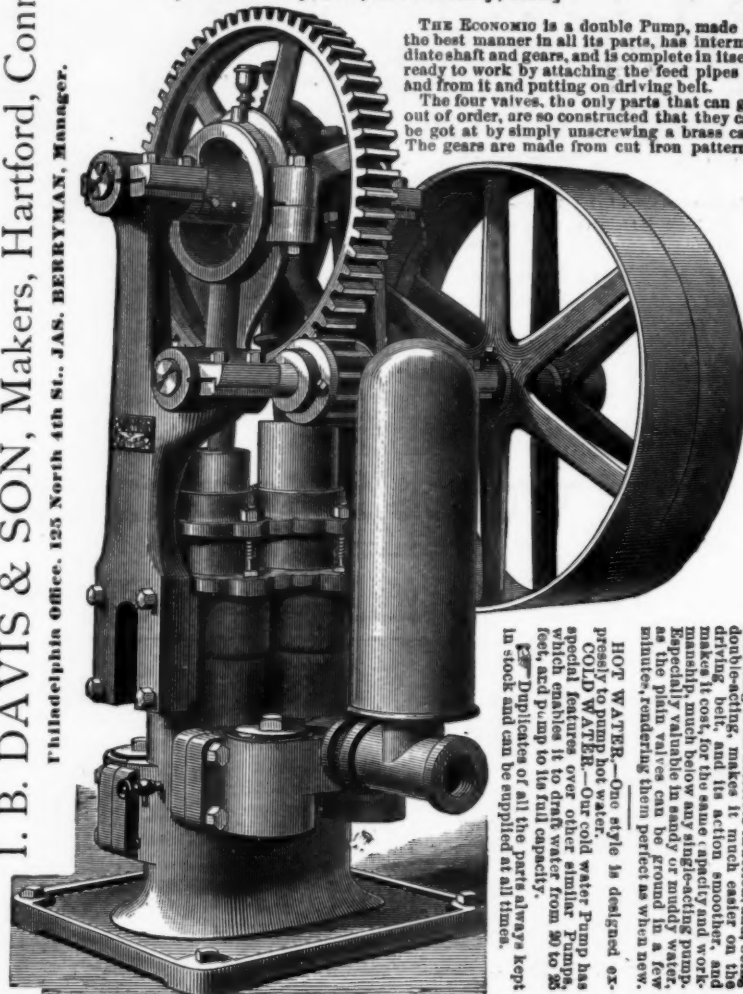
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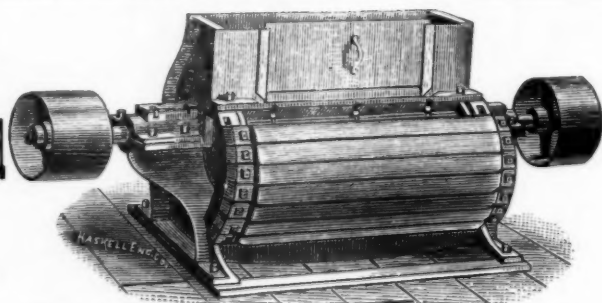
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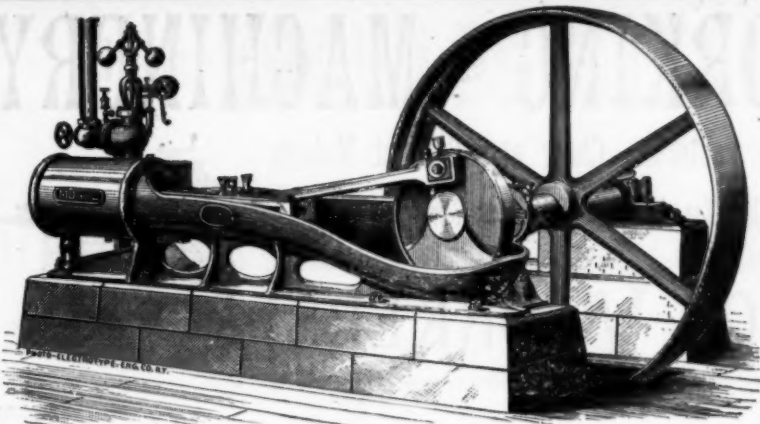
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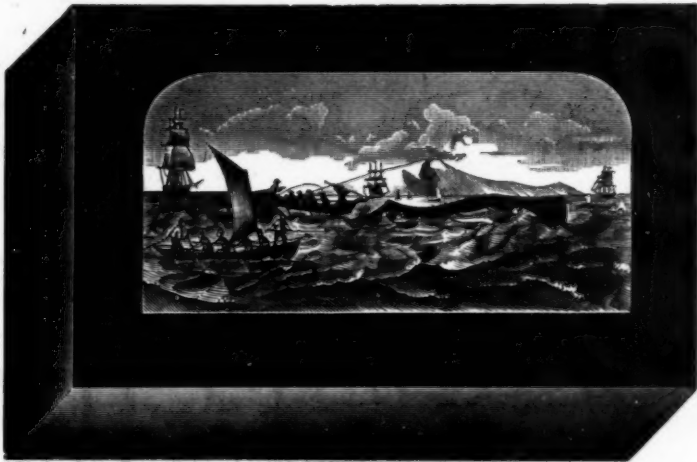
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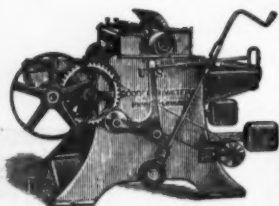
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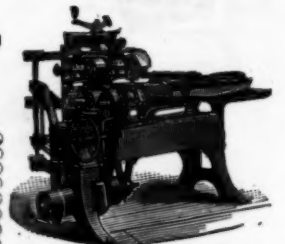
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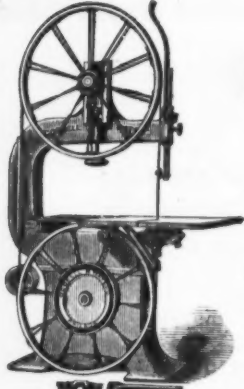


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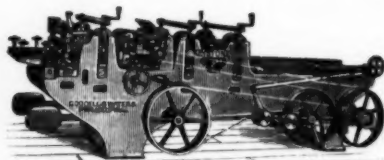
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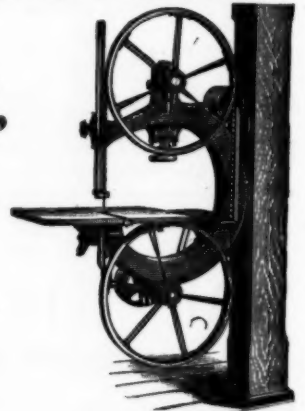
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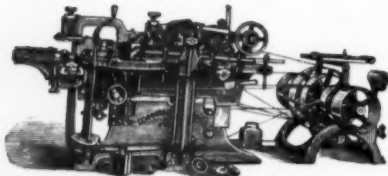


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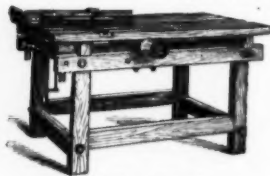
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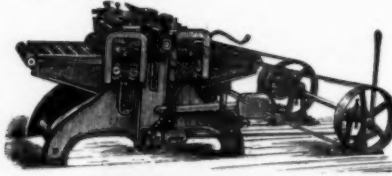
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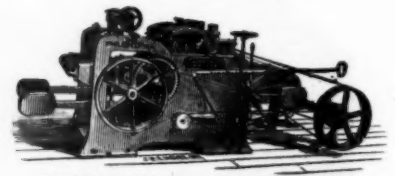
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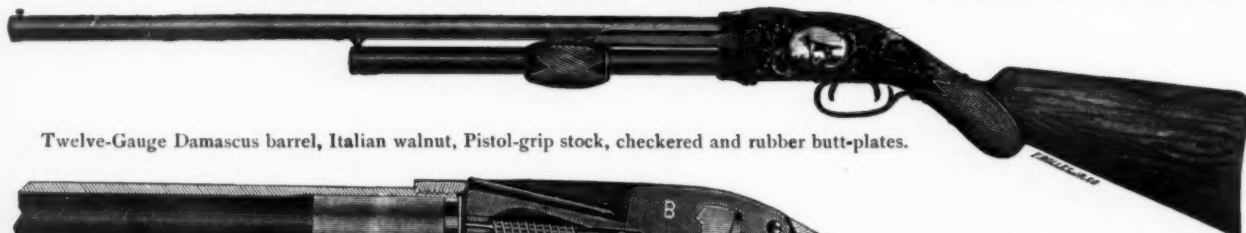
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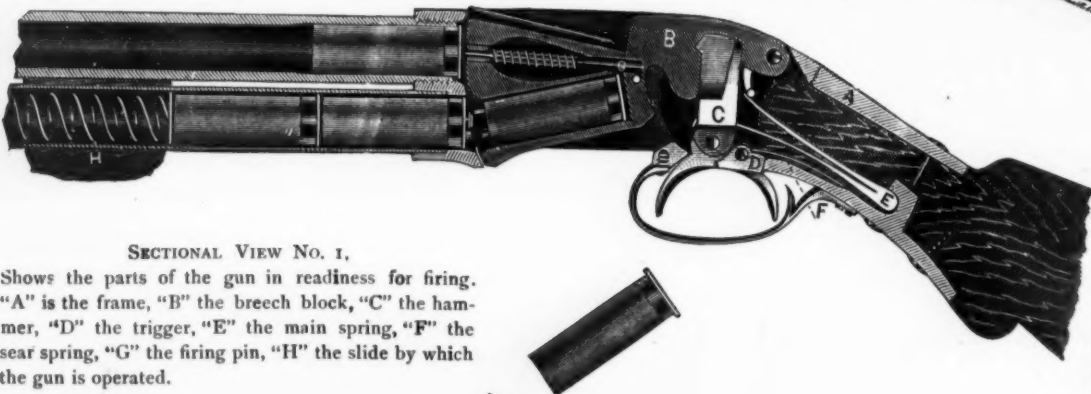
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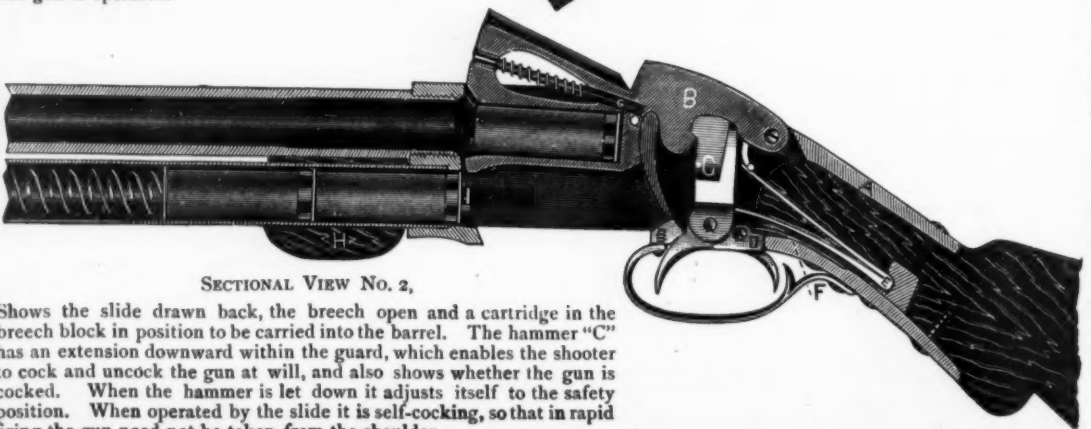
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SECTIONAL VIEW NO. 1.
Shows the parts of the gun in readiness for firing. "A" is the frame, "B" the breech block, "C" the hammer, "D" the trigger, "E" the main spring, "F" the sear spring, "G" the firing pin, "H" the slide by which the gun is operated.



SECTIONAL VIEW NO. 2.
Shows the slide drawn back, the breech open and a cartridge in the breech block in position to be carried into the barrel. The hammer "C" has an extension downward within the guard, which enables the shooter to cock and uncock the gun at will, and also shows whether the gun is cocked. When the hammer is let down it adjusts itself to the safety position. When operated by the slide it is self-cocking, so that in rapid firing the gun need not be taken from the shoulder.

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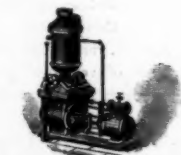
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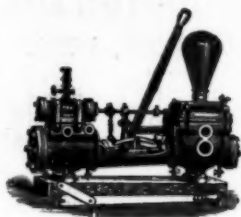
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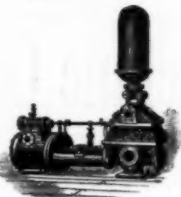
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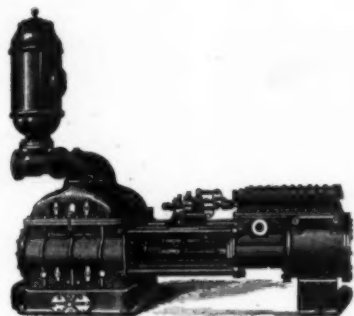


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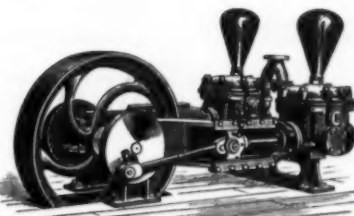


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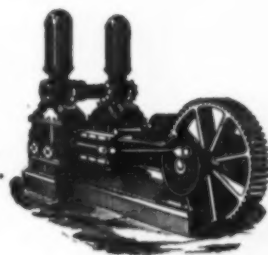
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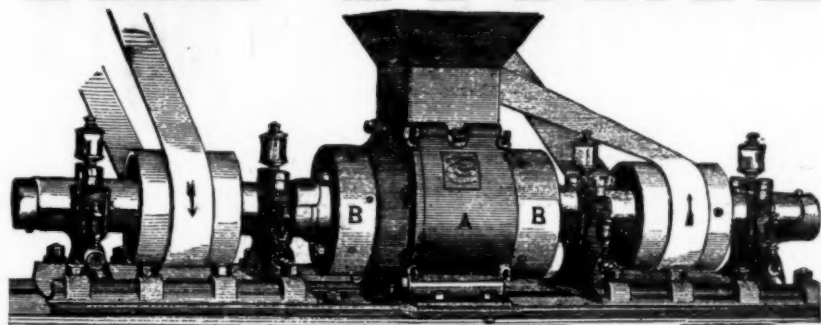
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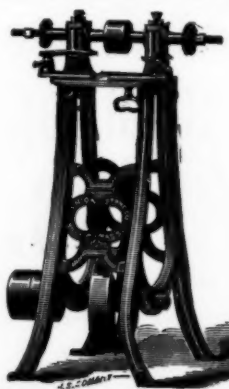
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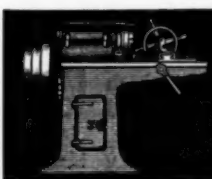
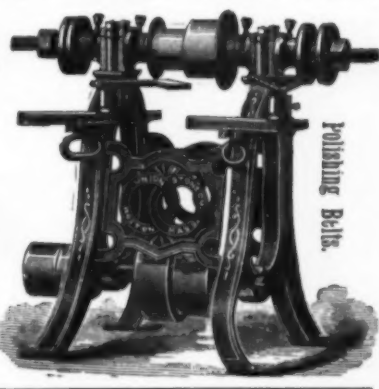
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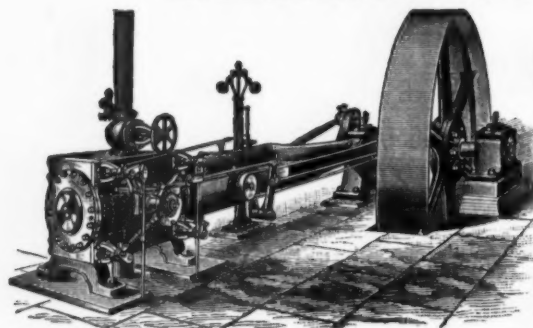
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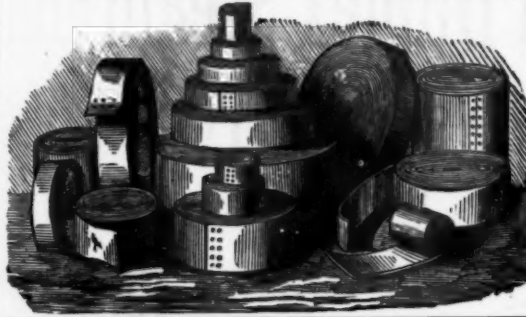
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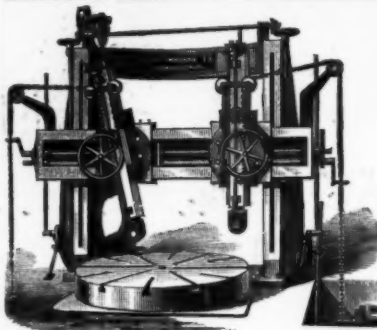
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